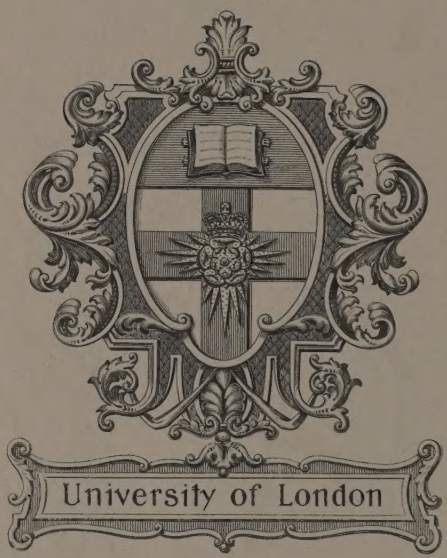
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ACCOUNTS AND PAPERS:

SIXTY-THREE VOLUMES.

—(29.)—

RAILWAYS.

Session

31 *January* 1893——5 *March* 1894.

VOL. LXXVIII.

1893-94.

ACCOUNTS AND PAPERS:

1893-94.

SIXTY-THREE VOLUMES:—CONTENTS OF THE

TWENTY-NINTH VOLUME.

N.B.—*THE* Figures *at the* beginning of the line, *correspond with the* N° *at the foot of each* Paper; *and the* Figures *at the* end of the line, *refer to the* MS. Paging *of the Volumes arranged for The House of Commons.*

RAILWAYS.

Railway and Canal Traffic Act, 1888:

[c. 7083.] Third Report by the Board of Trade of Proceedings under Section 31 of the Railway and Canal Traffic Act, 1888. p. 1

[c. 7262.] Fourth Report by the Board of Trade of Proceedings under Section 31 of the Railway and Canal Traffic Act, 1888. 27

Accidents:

[c. 7151.] General Report to the Board of Trade upon the Accidents that have occurred on the Railways of the United Kingdom during the Year 1892. 67

[c. 6944.] Returns of Accidents and Casualties as reported to the Board of Trade by the several Railway Companies in the United Kingdom, during the Year ending 31st Decemb r 1892; with Reports of the Inspecting Officers of the Railway Department to the Board of Trade upon certain Accidents which were inquired into. 91

[c. 7057.] Similar Returns for the Three Months ending 31st March 1893. 323

[c. 7194.] Similar Return for the Six Months ending 30th June 1893. 399

[c. 7245.] Similar Returns for the Nine Months ending 30th September 1893. 443

Auchnashellach (Highland Railway):

[c. 6946.] Report on the inquiry into the Circumstances attending the Collision which occurred on the 14th October 1892, near Auchnashellach, on the Highland Railway, and of the Correspondence between the Board of Trade and the Railway Company thereupon. 551

Capital, Traffic, Working Expenditure, &c.:

[C. 7142.] General Report to the Board of Trade in regard to the Share and Loan Capital, Traffic in Passengers and Goods, and the Working Expenditure and Net Profits from Railway Working of the Railway Companies of the United Kingdom for the Year 1892. p. 561

THE RAILWAY AND CANAL TRAFFIC ACT, 1888.
(SECTION 31.)

REPORT

BY THE

BOARD OF TRADE

OF

PROCEEDINGS UNDER SECTION 31

OF THE

RAILWAY AND CANAL TRAFFIC ACT, 1888.

Presented to both Houses of Parliament by Command of Her Majesty.

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THE RAILWAY AND CANAL TRAFFIC ACT, 1888.

(Section 31.)

Report by the Board of Trade of Proceedings under Section 31 of the Railway and Canal Traffic Act, 1888.

TO THE PRESIDENT OF THE BOARD OF TRADE.

Sir, July 1893.

I have the honour to report the further proceedings which have been taken with reference to complaints made under section 31 of the Railway and Canal Traffic Act, 1888, between the date of my last report (August 1891) and December 31st 1892.

As you are aware that section provides that,—

(1.) "Whenever any person receiving, or sending, or desiring to send goods by any railway is of opinion that the railway company is charging him an unfair or an unreasonable rate of charge, or is in any other respect treating him in an oppressive or unreasonable manner, such person may complain to the Board of Trade.

(2.) "The Board of Trade, if they think that there is reasonable ground for complaint, may thereupon call upon the railway company for an explanation, and endeavour to settle amicably the differences between the complainant and the railway company."

The clause is on the lines of an enactment which has been found of a beneficial effect in the United States, and it imposes upon the Department the duty of endeavouring to arrange the differences between traders and railway companies which, in some instances, might be brought before the law courts, but which the Legislature appear to consider might be usefully dealt with by the friendly action of the Department.

The Board of Trade have no power to enforce their decisions, and the only sanction of the clause is a report to Parliament under sub-section 4 of the section, which provides that,—

(4.) "The Board of Trade shall from time to time submit to Parliament reports of the complaints made to them under the provisions of this section, and the results of the proceedings taken in relation to such complaints, together with such observations thereon as the Board of Trade shall think fit."

The present Report embraces a longer period than the previous Reports, as it was deemed desirable to include in it all the complaints made between the date of the last Report and the date, January 1st, 1893, when the revised maximum rates and charges sanctioned by Parliament during the sessions 1891 and 1892, came into operation. The Report is, therefore, the third and last report which will be made upon complaints of rates and charges based upon the old maximum powers of the railway companies. Though the Report relates to a longer period than usual, the number of complaints dealt with are fewer, the near approach of the date of the coming into operation of the revised rates and charges tending no doubt to reduce the number.

The total number of new complaints was 45, and in addition 12 complaints which were unfinished at the date of the last Report have also been under consideration. The nature of these complaints, and the action taken on them, will be found detailed in the Appendix to the Report.

With regard to the 12 complaints which remained over from the last Report, it will be seen from the Appendix that the complaints of Messrs. T. and J. Ferguson, and the Belfast and Mersey Steamship Company were satisfactorily settled, and that in the case of the Kent Fruit Growers' Association, the railway company promised to revise the rates so as to remove as far as possible the anomalies complained of before the next fruit season. The complaints of Messrs. Kimmins, Drew, & Co., and of Mr. S. Bendall, were settled by the adjustment of the rates on a mileage basis, a course which it must be remembered involved the raising of certain rates other than those charged to

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the complainants. With regard to the complaint of Mr. R. W. Rose, of Sandwich, which was specially referred to in the last Report, it will be seen that the complainant brought his case before the Railway and Canal Commissioners, but that the case was settled before trial, the company undertaking to place Sandwich and Deal on an equal footing in the matter of the rate complained of, and to pay the applicant the amount claimed and the costs of the application. The result was in accordance with the opinion which the Board of Trade had expressed on the complaint submitted to them.

Of the 45 new complaints, 10 were complaints of rates being unreasonable or excessive in themselves, 6 of higher rates being charged for shorter distances on the same line and 15 of disproportionate rates or of higher rates for shorter distances not on the same line. The remaining 14 cases were complaints relating to various matters which cannot be classified. Only one of the complaints was against a canal company.

In dealing with 10 complaints, those numbered 19, 23, 33, 38, 40, 42, 45, 51, 54 and 55, the Board of Trade obtained concessions which were more or less satisfactory to the complainants, though as regards some, and among them that of Messrs. Samuelson & Co., the concession did not go as far as the complainants desired. In five complaints those numbered 14, 41, 48, 50 and 57, the opinion or action of the Board of Trade upon the complaints was also more or less in favour of the complainants, but the Board of Trade are not aware that the companies have yet taken any action in these cases to meet the complaints. In the case of 13 complaints, after the explanations furnished by the railway companies to the complainants, no further communications were received from the latter. In 17 complaints out of 45 the results were apparently unsatisfactory to the complainants. In one of these cases (No. 15), the Board of Trade were of opinion that the question of undue preference which was involved was of such magnitude that they could not attempt with hope of success to deal with it under the section.

In 14 cases, those numbered 17, 20, 21, 22, 24, 25, 35, 37, 39, 44, 46, 47, 52 and 53, the Board of Trade did not consider that it was desirable to intervene any further after receiving the companies' explanations, the complaints in some instances turning upon legal questions which the Board of Trade have no power to determine. In one case (No. 28) the decision of the Board of Trade after hearing both parties was against the complainants. In another case (No. 34), the complainants declined to attend a meeting at the Board of Trade for the purpose of discussing their difference with the railway company.

At the end of 1892 the Railway and Canal Traffic Act, 1888, had been in operation four years, and during that period 152 complaints were made to the Board of Trade under section 31 of the Act. During the same period the old maximum powers of the railway companies under which the complaints were made were being revised under section 24, and probably this fact helped to diminish the number of complaints. The revised maximum powers came into operation on the 1st January this year, and the future Reports of the Board of Trade will therefore relate to complaints of rates and charges based on these new powers.

The following statements show the nature and result of the complaints dealt with in this and the two preceding reports presented to Parliament:—

NATURE of COMPLAINTS under section 31 of the RAILWAY AND CANAL TRAFFIC ACT, 1888.

	1st Report.	2nd Report.	3rd Report.	Total.
(1.) Rates unreasonable or excessive in themselves.	34	10	10	54
(2.) Higher rates for shorter distances on the same line.	4	14	6	24
(3.) Disproportionate rates or higher rates for shorter distances not on the same line.	7	13	15	35
(4.) Cannot be classified	7	18	14	39
Total	52	55	45	152
Railway companies	49	54	44	147
Canal companies	3	1	1	5
Total	52	55	45	152

RESULTS of the COMPLAINTS made under section 31 of the RAILWAY AND CANAL TRAFFIC ACT, 1888.

	1st Report.	2nd Report.	3rd Report.	Total.
1. Cases settled more or less to the satisfaction of the complainants.	15	21	15	51
2. Cases in which no further communication was received from the complainants after communicating to them the explanations furnished by the companies.	25	11	13	49
3. Cases in which the complainants were not satisfied, owing either to— (1) the Board of Trade deciding not to take any further action upon receiving the companies explanations, or (2) the decision of the Board of Trade being adverse, or (3) the complaints turning upon legal questions which the Board of Trade have no power to determine.	12	23	17	52
Total - - - - -	52	55	45	152

In summing up the result of the action of the Board of Trade under the clause, I desire to make the following general observations:—

1. The railway companies, almost without exception, have shown a marked willingness to treat the clause as a satisfactory method of determining the less important differences between themselves and traders. They have, as a rule, deputed their principal officers to attend the conferences at the Board of Trade, and have shown a strong desire to defer to the views and to adopt the suggestions made by the Department. It is not in every instance possible that they should do so unreservedly. The suggestions made by the Department may, under certain circumstances, have a far-reaching effect which the general managers are bound to consider. In the cases, for instance, of

(*a*) Messrs Pidcock & Co., and

(*b*) Mr. G. Wheeldon,

the Board of Trade expressed an opinion that certain services rendered to the complainants at their sidings were not sufficient to justify a charge equal to the charge made to traders receiving station accommodation.

The Manchester, Sheffield, & Lincolnshire and Midland Railway Companies in reply both stated the difficulty they experienced in accepting the view expressed by the Board of Trade, and desired a further opportunity of considering the question before coming to a final determination.

Though I trust that the companies will, after the consideration promised, be able to adopt the view taken by the Board of Trade, it is impossible to deny that the importance of the issue justifies the caution which they are exercising in considering the subject.

2. The traders have also, with very few exceptions, put forward their complaints temperately, and in a manner calculated to facilitate an "amicable settlement."

In those very few exceptions I regret to say the attitude adopted and the language used have been such as to impede the action of the Department, but, generally speaking, the complainants have shown every desire to come to terms and to meet the railway companies reasonably and fairly.

3. My opinion as to the value of the clause has been strengthened by experience gained since the last Report.

It affords a useful method of adjusting the less important differences, or, in other words, the differences not far-reaching in their influence, which, from time to time, arise between the railway companies and canal companies and traders.

In certain cases it has been impossible for the Board of Trade to deal with the matter in dispute without an examination into a large series of circumstances collateral to the particular facts of the complaint, or to make a suggestion which would not have the effect of extending far beyond the scope of the particular issue.

In other cases no suggestion could be made, or proposal put forward, without an interpretation of legal provisions which the Board of Trade have no power to determine. The clause, in fact, cannot be regarded as providing a tribunal for the settlement of all complaints.

The procedure which it established must be regarded as subordinate to the procedure before a legal tribunal, to which it ought to be within the power of both companies and the traders to appeal. In other words, it provides a method for the avoidance of litigation, but it does not provide a method of settling litigation.

4. As I have already stated to a Committee of the House of Commons, the strength of the clause seems to me to lie in its weakness. Approached as it is at present, in a conciliatory spirit, by both companies and traders it works efficiently, but if the Board of Trade had power to order the adoptionof their suggestions, the procedure would be made far more complicated, the willingness of either party to rely upon it would be seriously impaired, and the decisions of the Department would not only be so liable to external influence as to weaken their efficiency, but would also be so liable to review by the properly constituted courts of the country as to make the clause of very little service to either party.

I have, &c.

COURTENAY BOYLE.

Appendix to the Third Report on Complaints dealt with under section 31 of the Railway and Canal Traffic Act, 1888.

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
			CASES UNFINISHED AT DATE OF SECOND REPORT.		
1	1890. April 24	Kent Fruit Growers' Association.	London, Chatham, and Dover.	That the delivery rates for fruit and vegetables consigned to the London markets from Kent were unreasonable in comparison with the station to station rates, and that the railway company virtually prevented traders doing their own carting by excluding traders' vans from the goods yards till 9 o'clock, which was too late for the market.	A conference was held in this case. The Company pleaded that the rates were special rates for a special traffic, that they had to keep a large special staff, and that the traffic, which varied from day to day, was conveyed by special vans as soon as it arrived to the different markets. It was acknowledged that the rates charged were very considerably in excess of those charged by ordinary goods train. The Company added that it would be impossible to conduct their business if traders' vans were admitted to their goods yards at all hours. The Company ultimately stated (August 1891) that before the next fruit season the charges would be revised, so as to remove as far as possible the anomalies complained of. A copy of this communication was sent to the complainants, from whom no further communication was received.
2	July 15	Sir A. Hickman, Wolverhampton.	Great Western -	That the company charge him the same rate from Adderbury to Bilston as they charge from Hooknorton to Bilston, which is eight miles further, and that they charge 1*d.* more than from King's Sutton Station, which is only one mile less. Further that complainant's traffic is from siding to siding, whereas for the traffic with which it is compared the company provide station accommodation at both ends.	The Company replied that the rates were grouped at the Staffordshire end, the complainant being charged an equal rate to Wednesbury (56 miles) and Bilston (60 miles). Further that the rates were exceedingly low, and that if it was considered that some difference should be made where the railway company provided accommodation for unloading into canal boats it must be done by an increase in the rates to those places, which course would not benefit the complainant in any way. The Company subsequently added that senders of iron ore traffic who consigned to various works in the district and the consignees themselves as a body desired a uniform rate, and that the principle had been found to work generally in a satisfactory manner. The question of the apportionment of the rate between the Great Western and the Banbury and Cheltenham Companies was only one of the terms on which the Great Western worked the Banbury and Cheltenham Railway, and did not affect the gross rate charged to the freighter. A conference with both parties was held at the Board of Trade, and the complainant was afterwards informed that as regards the rate he had admitted at the conference that it was in itself not unreasonable, and that with regard to the other points the Board of Trade were of opinion that, having regard to the circumstances, the grouping was not unfair, and that it was not material to consider the division of the receipts between the two companies. The complainant replied regretting decision of Board of Trade.
3	Nov. 5	T. and J. Ferguson, Kilmarnock.	Glasgow and South-Western.	That cotton yarn in skips from Lancashire to Kilmarnock is charged 25*s.* per ton, while similar traffic is taken 23	The Company replied that several railway companies were concerned in the rate, and that the subject would be brought before the Railway Clear-

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
				miles further along the same railway to Glasgow at 22*s.* 6*d.* per ton, being 2*s.* 6*d.* per ton less for the longer distance.	ing House Conference, and a further communication sent. After some interval the Company reported that the companies interested had agreed to concede the rate of 22*s.* 6*d.* per ton to Kilmarnock from the 31st August 1891. A copy of this decision was sent to the complainant.
4	1890. Dec. 24	Hastings Town Council.	Midland, London and North-Western, Great Northern.	That the through rates of charge made by the companies to traders and others at Hastings for the carriage of coal to St. Leonards and Hastings Stations are unfair and unreasonable, as compared with the rates to Reading and Portsmouth, even before the increase of 9*d.* per ton imposed on August 1st, 1890, and that the rates charged are higher than the maximum rates, including terminals, proposed by the Board of Trade in their revision under section 24 of the Act.	The Board of Trade pointed out to the Town Council that as regards the comparison with the Board of Trade proposals, the proposed rates had been estimated at ·50*d.* per ton per mile (the rates proposed for the Midland, London and North-western, and Great Northern), whereas the Board of Trade proposals with regard to the South-Eastern, London and South-Western, and London, Brighton, and South Coast Railway Companies would admit of a mileage charge of 1*d.* or ·90*d.* per ton according to the distance travelled. The Midland Railway Company replied that the coal rates to Hastings and St. Leonards were high, but that this was due to the action of a member of the Hastings Corporation (Mr. P. H. Ellis), who had made a complaint which led to a levelling up. If the present complaint were pressed the railway companies might have to level up the rates to Portsmouth, and other places mentioned, but they could not be expected to do this voluntarily on account of the large interests involved. The Corporation answered that they had no desire to compel the railway companies to increase their coal rates to other places, and that as the Midland Railway Company admitted that the rates to Hastings and St. Leonards were high they should be reduced. The Corporation also pointed out that when Mr. Ellis brought his complaint referred to by the Company he was not a member of the Corporation, and acted entirely on his own responsibility. They added that the rate to Ore Station, just outside the Hastings municipal boundary, and one mile from Hastings Station, was 7*d.* per ton less than to Hastings and St. Leonards. The Corporation concluded by stating that they would be reluctantly compelled to institute proceedings unless the companies could be induced to remedy the complaint. The Company stated that they were prepared to raise the Ore rate, and would be willing, if requested by the Corporation and Mr. Ellis, to reconsider with the other companies concerned the restoration of the old rates to Hastings and St. Leonards. The Corporation and Mr. Ellis joined in asking for the restoration of the old rates, and that the present Ore rate should stand; but the railway company required that they should also concur in the restoration of the former rates both with regard to Hastings and the adjoining stations outside the borough, to which they demurred. A conference was held at the Board of Trade on December 15th, 1891, at which it was arranged that the Midland Company and the other companies concerned should reconsider the matter and communicate with the Corporation and Mr. Ellis. In May 1892 the Company suggested that the Corporation, Mr. Ellis, and any traders who receive

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
					traffic at the lower rates should make a written application for the restoration of the rates in force prior to August 1st, 1890, on condition that if an action for undue preference is brought against any of the companies interested they would consent to the immediate restoration of the rates of 1st August 1890. In October 1892 the Company informed the Board of Trade that the application had not been made by any of the parties. No further communications have been received by the Board of Trade upon the subject from any of the parties.
5	1891. Feb. 16	R. W. Rose, Grocer, &c. Sandwich.	South-Eastern -	That certain goods are charged from 15*s.* to 30*s.* per ton to Sandwich, while the rate to Deal, five miles further on the same line, is 11*s.* 8*d.* per ton.	Company replied that special rates were in force for grocers and ironmongers' stock in trade in certain towns, of which Deal was one, where competition by water or otherwise existed, and that they were prepared to admit that many and serious difficulties had followed upon such special rates, and that the question of their withdrawal was before the directors. A conference was held, and it was decided that the railway company should consider what could be done in the matter. The Company subsequently wrote stating that they did not see their way to make any proposal, and asked for the decision of the Board of Trade. The Board of Trade informed the Company that in their opinion the difference of treatment had not been justified, and that it had not been proved that the withdrawal of the special rates was the only solution. The Company in reply expressed the opinion that the only possible course open to them was to cancel the special trade rates. It appeared, however, from subsequent communications which were received from the complainant, that the Company did not adopt this course, and in reply to a suggestion that the Board of Trade should write to the Company upon the subject, the Board pointed out that although the cancellation of these special trade rates might remedy the grievance of the complainant, the levelling up of rates which would result would affect the traders who at present enjoy the special rates. Under the circumstances the complainant stated that his course appeared to be to bring the matter before the Railway Commissioners. According to the fourth Annual Report of the Railway and Canal Commission an application was made to the Commissioners, but "the case "was settled before trial, the defen- "dants undertaking to place Sand- "wich and Deal on an equal footing "in the matter of the rate complained "of and to pay the applicant the "amount claimed, and the costs of "the application."
6	March 23	Cardiff Pure Ice and Cold Storage Company, Limited (Neale and West, managers).	Great Western and London and North-Western.	Complaint of the rates for beef and frozen mutton to the prejudice of Cardiff, viz.: Beef. per ton. Liverpool to London - 25*s.* Cardiff to London - 35*s.* Frozen mutton. Cardiff to Liverpool - 35*s.* " " Manchester 55*s.* " " London - 35*s.* Bristol to London - 20*s.* That although Cardiff is much nearer London than	The London and North-Western replied that the rates between Liverpool and London had been fixed to accommodate a long established and very extensive trade, and that the uniform rate from Cardiff to London of 35*s.* per ton for a distance by the London and North-Western route of 277 miles did not compare unfavourably with those rates. As regards the rate from Cardiff to Manchester, with which the rate to Liverpool was contrasted, although

Reference Number	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
				Liverpool is, the rate for beef is 10*s.* per ton more; that although Manchester is not so far from Cardiff as Liverpool is, the rate is 20*s.* per ton more, and that although the distance between Cardiff and London and Bristol and London differs by only 40 miles the rate is nearly double.	the circumstances in the two cases were not alike the railway companies concerned had had under consideration the question of adopting a modified rate. The Great Western replied, on part of the case, that the application for the adoption of the same rate for meat from Cardiff to Manchester, as from Cardiff to Liverpool, was one which the company could not entertain as the Liverpool rate was specially low owing to sea competition. It was also pointed out that the rate of 35*s.* per ton to Liverpool was restricted to 3 tons and upwards, and exclusive of cartage in Liverpool, while the rate of 55*s.* per ton to Manchester was applicable to any quantities, and included cartage in Manchester. The Company thought it might, however, be reasonable to consider whether a somewhat lower rate from Cardiff to Manchester for meat in 3-ton lots and upwards could not be arranged, and the railway companies interested were in communication on the subject. Later on, the Great Western stated that the railway companies concerned did not see their way at the present time to reduce the existing rate for meat from Cardiff to Manchester, but it was their intention to make a general and complete examination, under their revised powers, of the rates charged for the conveyance of fresh meat, and they could not further complicate the revision by adopting figures based upon exceptionally low rates, which were brought into operation under special circumstances, and which might possibly not be continued. In reply to this the complainants observed that the railway company declined to alter their rate, although it was admittedly unreasonable.
7	1891. April 18	Kimmins, Drew, & Co., Dudbridge.	Midland - -	That the flour rates from Dudbridge to stations in the Forest of Dean are higher than the rates from Gloucester to the same stations, the distances in the latter case being for the most part seven miles further, and that as the complainants are in constant competition with Gloucester millers in the Forest of Dean their trade is materially affected.	Company replied that the rates were low and reasonable, and that complainant's business was not affected by the Gloucester rates, which latter would, however, be raised if held to constitute an undue preference. The complainants rejoined that they did sustain injury by reason of lower rates being offered for flour from Gloucester than from Dudbridge as stated in their first letter. A conference was held in this case, and the complainants and the Company were afterwards informed that the Board of Trade were of opinion that the charging of higher rates, where the distances were the same or shorter, had not been satisfactorily explained by the Company, and did not appear to be justified. The Company subsequently (Feb. 1, 1892) adjusted the rates on a mileage basis.
8	May 20	R. McCowen and Sons, Tralee.	Waterford and Limerick.	That while the rate for potatoes from Fenit Pier to Listowel viâ Tralee Pier, Waterford and Limerick Railway, is 4*s.* 2*d.* per ton, the rate from Tralee to Listowel is 5*s.* per ton, the distance from Tralee to Listowel being 20 miles and from Fenit to Tralee 8 miles.	Company replied that the rate of 4*s.* 2*d.* was quoted between Fenit and Listowel in consideration of a large quantity and canal competition between Fenit and Tralee. A rate of 5*s.* was subsequently quoted between Tralee and Listowel for a much smaller quantity, but the Company afterwards offered to reduce it to 3*s.* 6*d.*, which was refused, as the complainants contended that the proportionate rate should be 2*s.* 6*d.* A copy of the reply was forwarded to the complainants, who, upon repeating their complaint, were in-

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
					formed that the case was not one in which the Board of Trade could usefully take further action.
9	1891. May 28	E. V. Greatbatch, Stoke-on-Trent.	London and North-Western.	That since February last the railway company have put on an extra charge of 6*d.* per ton for the collection of china clay traffic at Runcorn Docks, and have not complied with the provisions of the Railway and Canal Traffic Act, 1888, by giving notice of such increase.	Company replied that up till February last they had been content to "sink" a charge of 1*s.* per ton made by the Manchester Ship Canal Company for services at Runcorn Docks; but that it had since been found necessary to recover one-half the charge from the trader; and that it was not such an increase of rate as to require the statutory notices to be published. A conference was held in this case, and it was agreed that the railway company should see what could be done, though not much hope was entertained of their being able to satisfy the complainant. It was pointed out at the conference that the Board of Trade could not decide the legality of the charge. The Company ultimately replied that they had been unable to make any modification in the charge, seeing that the extra charge of 6*d.* per ton to which the complainant objected was made to meet payments to the Manchester Ship Canal Company of rates varying from 1*s.* to 2*s.* 6*d.* per ton on china clay over and above the ordinary rates for carriage. A copy of the reply was sent to the complainant who wrote expressing regret at the decision of the Company.
10	June 22	Belfast and Mersey Steam Ship Co., Limited (S. Lawther and Sons).	Belfast and Northern Counties.	That the railway company refused to give them the same rates and regulations as are in operation with their opponents in the trade for through traffic between Irish and English stations, and asking the Board of Trade to order a through rate.	The Board of Trade in the first instance pointed out that section 31 applied to persons "receiving or sending or "desiring to send goods by any "railway," and that it had not been alleged that the Belfast and Mersey Steam Ship Company came within that category. After much correspondence and several interviews, the railway company informed the Board of Trade that it had been arranged to concede through rates to the complainants. Upon being informed of this decision, the complainants said the result was most satisfactory, and thanked the Board of Trade for their good offices.
11	June 27	S. Bendall, Wotton-under-Edge.	Midland - -	That the rates charged for the carriage of grain, flour, &c. from Charfield Station to the Forest of Dean and other places, when compared with the rates charged from other stations to the same places and over similar distances, are prejudicial and a serious injury to complainant's business.	This case was the subject of a conference, together with the similar complaint of Messrs. Kimmins, Drew, & Co. (See case No. 7, p. 10), and the complainant and the Company were afterwards informed that the Board of Trade were of opinion that the charging of higher rates, where the distances were the same or shorter, had not been satisfactorily explained by the Company and did not appear to be justified. The Company subsequently (Feb. 1, 1892) adjusted the rates on a mileage basis.
12	July 10	Eastmans, Limited, London.	Great Western -	That the rates for fresh meat from London to various places in Monmouthshire and West of England are unduly high and anomalous.	The Company replied that the rates were fair and reasonable, and that it did not follow that apparent anomalies should only be removed by reductions. The Company added it was quite possible that the revision consequent upon the new Act would result in the rates being placed more nearly upon an equal mileage basis. The complainants contended that the Company's answer was unsatisfactory, and that their complaint was of "sectional inequalities." The Company, in reply, pointed out that the rates complained of did not compete either with each other or with lower rates from other dis-

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
					tricts, and that the complaint raised the question of equal mileage rates, a principle which had always been rejected in the interests of the general trade of the country. A conference with both parties was then held at the Board of Trade, which resulted in the complainants being informed that their complaint was not of a character which the Board of Trade could properly attempt to settle amicably.
				NEW CASES.	
13	1891. July 31	Lieut.-Gen. Sir F. W. Fitz-Wygram, M.P.	London and South-Western and Midland.	That the rate for coal from Linby Collieries to Rowland's Castle is 1*s.* 2*d.* per ton more than to Havant, though the distance is three miles less, the rates being 10*s.* 2*d.* and 9*s.* per ton respectively.	The London and South-Western Railway Company replied that Havant was largely supplied with coal brought by sailing vessels and small steamers, and owing to this competition the Northern Railway Companies were compelled to quote lower rates than were fairly chargeable at Rowland's Castle. The Company added that the rates were fixed by the Northern Companies, and that they received fixed proportions. A copy of the reply was sent to the complainant. The Midland Company, in reply, referred to the sea competition, and stated that they were advised that a lower rate did not, in such circumstances, amount to an undue preference, and that, should this view prove not to be well founded, the railway companies would be obliged to raise the Havant rate, which would be a disadvantage to the Havant consumers, without conferring any benefit on anyone except those interested in the sea-borne coal. This answer had already been given by the Midland Company to the complainant, from whom no further communication was received.
14	Aug. 5	London Consignees and Dairymen, receiving milk by Midland Railway.	Midland -	That until the 13th July, 1891, milk consigned by evening trains for morning delivery in London had been delivered at St. Pancras Station, but that since the date in question the milk had been delivered at a wooden shed in a siding at Somers Town, which the complainants alleged to be utterly unfitted for the traffic, causing the loss of much valuable time in shunting and unloading and pecuniary loss through the turning over of churns owing to the limited space. On a recent occasion milk due to arrive at St Pancras at 2.45 and 4.15 a.m. was not delivered at Somers Town till 5.10 a.m., and the loading into carts not completed till 6 a.m.	The Company replied that the accommodation which had been provided, at great expense, at Somers Town, was reasonable, and that the case of delay mentioned was exceptional. The Board of Trade then appointed Major Yorke, R.E., to visit the spot and to report to them upon the subject. Major Yorke reported that, in his opinion, the Company had provided a reasonable amount of accommodation at Somers Town; but he suggested that when the new goods station was completed, a second platform now used for fish traffic should, if possible, be assigned to the milk traffic. A copy of the report was sent to the complainants and the Company, from neither of whom was any further communication received.
15	July 16	C. Arkcoll, Wholesale Grocer and Provision Merchant, Maidstone.	South-Eastern -	That by the operation of the special grocer's stock-in-trade rates between London and certain towns in Kent, he is unfairly and unreasonably handicapped in his business as a wholesale merchant supplying the same towns from Maidstone. The complainant mentioned the following, among other instances:— London to Dover, 74 miles, 11*s.* 8*d.* per ton for all goods. Maidstone to Dover, 52 miles, 12*s.* 1*d.*, 15*s.* 10*d.*, and 22*s.* 6*d.* per ton according to class.	The Company replied that the case was somewhat similar to that of Mr. Rose, of Sandwich (see case No. 5, page 9), and pointed out that Maidstone was one of the towns which received the benefit of the special rate from London. The complainant replied that he failed to see the least similarity between his case and that of Mr. Rose, and that his complaint related to the rates from Maidstone to certain towns as compared with the rates from London to the same towns, while Mr. Rose's complaint related solely to the rate from London to Sandwich. The Board of Trade then stated that the complaint was essentially

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
					one of undue preference, and of such magnitude that, although they considered it might properly be brought before the Railway and Canal Commissioners for adjudication, they were of opinion that they could not usefully attempt to deal further with it under section 31 of the Railway and Canal Traffic Act, 1888. The complainant then wrote urging the Board of Trade to induce the Company to withdraw the special stock-in-trade rates at once, in reply to which the Company stated, that though desirous of withdrawing the rates complained of, they had not found it possible, in the general interest of the traders, to do so, and they did not think it would be possible to make any alteration until all the rates had been revised in accordance with the provisions of the South-Eastern Railway Company (Rates and Charges) Order Confirmation Act, 1891. A copy of the reply was sent to the complainant.
16	1891. Aug. 13	P. McKinney, Poultry, &c. Dealer, Londonderry.	Great Northern of Ireland.	That the rates charged for the conveyance of live poultry from several stations to Londonderry are excessive and not in proportion to the rates charged to Belfast; and also that the rates for the empty boxes sent to receive the poultry are excessive.	The Company replied that the rates complained of were in accordance with their general scale, and, with the exception of the rates between ports, were the rates in operation all over the line. The Company also pointed out that the complainant had in some instances compared station to station rates with rates which included collection and delivery. With regard to empties, the Company stated that, in common with all other railway companies in Ireland, they charged the 3rd class rate for returned empty boxes. A copy of the reply was sent to the complainant, from whom no further communication was received.
17	Sept. 14.	P. Fehily, Ballineen.	Cork, Bandon, and South Coast.	That the rate for coal from Courtmacsherry to Ballineen of 3*s.* per ton is unfair in comparison with the rate of 2*s.* 3*d.* per ton to Bandon, the difference in the distance from Courtmacsherry to the two places being only one mile.	The Company explained that the rate to Bandon was exceptionally low and was made to meet water competition, as vessels could be brought up Kinsale Harbour to within a few miles of the town. By the latter route coal was delivered at Bandon for 2*s.* 6*d.* per ton. A copy was sent to the complainant, who again wrote and mentioned a dispute as to correctness of weights. He was informed that this did not come within the scope of section 31.
18	Sept. 22.	Astley and Tyldesley Coal and SaltCo., Limited, Tyldesley, near Manchester.	Lancashire and Yorkshire.	That the through rate of 1*s.* 8*d.* per ton for coal conveyed from their private siding at Tyldesley to the private siding belonging to the Manchester Corporation, at the Bradford Road Gasworks, on the London and North-Western and Lancashire and Yorkshire Railways, should only be 1*s.* 5*d.*, the Lancashire and Yorkshire Company not being entitled as they claim, to charge double toll in addition to a minimum charge as for six miles for a portion of the route, or to charge for the use of Phillips Park siding, which is used solely for the railway companies' own convenience.	The Lancashire and Yorkshire Company replied that they had special statutory authority to charge the double toll in question in addition to the minimum charge as for six miles, and that the circumstances connected with the complainant's traffic justified the charges made in respect of the services rendered and accommodation provided at Phillips Park siding. A copy was sent to the complainants, from whom no further communication was received.
19	Sept. 29.	Matthew Blackwood and Son, Barrhead.	Glasgow and South-Western.	That the complainants, who are cotton yarn bleachers, are charged 24*s.* 2*d.* per ton for the conveyance of their goods between Lancashire towns and Barrhead, while their competitors at Glasgow are charged 1*s.* 8*d.* per ton less for a distance *viâ* Dalry	After some delay the Company stated that the rate was under consideration at the Railway Clearing House, and later on they informed the Board of Trade that it had been agreed to adopt a rate of 22*s.* 6*d.* per ton C. and D. for yarns, cotton packed and returned yarn empties, Blackburn, Manchester, Rochdale,

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
				of about 18 miles further. The complainants added that for all other goods except cotton yarn, Barrhead was included in the Glasgow group, and that they understood that the Glasgow rate for cotton yarn had been granted to Kilmarnock, which is 16 miles further than Barrhead from Glasgow.	Skipton, and Warrington groups with Barrhead, to apply on and after January 4th, 1892. A copy of this decision was sent to the complainants, who tendered their best thanks to the Board of Trade for bringing the question of rate to a satisfactory issue.
20	1891. Oct. 8.	Alex. Sparrow & Co., Liverpool.	Great Western -	That the Company insist on charging a rate, which includes collection and delivery, leaving the parties to claim a rebate when the services are not performed by the Company at places where they have a cartage establishment.	The Company replied that they only followed the usual practice in this matter, which had been found by long experience to meet the requirements of the traders generally. A copy was sent to the complainants, with whom further correspondence ensued, but the Board of Trade did not consider it necessary to address any further communication to the railway company.
21	Oct. 8.	C. A. Mills, Hanley	North Staffordshire	That the Company treated him unreasonably in charging the two ton rate of 13*s.* 4*d.* per ton for a consignment of 18 tons of iron rails from Barrow-in-Furness to Harecastle Station.	The Company replied that neither legally nor equitably had the complainant any case for a special rate for his lot of 18 tons, and that it was very undesirable to make special rates unless they could most unquestionably be justified, as they always led to suspicions and complaints of preferential treatment. The Company added that the distance the consignment was carried was 121 miles, and that the rate was, consequently, a low one. A copy was sent to the complainant, who repeated his contention, to which the Company replied that they had nothing further to add. The Board of Trade decided not to take any further action.
22	Oct. 13.	W. F. Bigger, Londonderry.	Great Northern of Ireland.	That in the course of his business he received large consignments of dead pigs, and that when, owing to very hot weather or other causes, more urgent despatch was necessary, the Company charged a premium of $33\frac{1}{3}$ per cent. on ordinary goods rates, although the same train carried other merchandise regularly at ordinary rates.	The Company replied that the rates charged to complainant were identical with those charged to other buyers similarly situated, from whom no complaints had been received, and that he was, therefore, not prejudiced in any way. The complainant rejoined that he was quite aware that the same treatment was extended to the only other firm in Londonderry, as he was also acting on their behalf, and urged his claim for redress. The Company, in reply, admitted that from Greenore to Derry, English goods were carried by passenger train at goods train rates, while pigs from intermediate market stations in Ireland were charged passenger train rates. The complainant, referring to this admission by the Company then contended that his traffic was entitled to the same terms as the English traffic. The Company replied that the English goods carried by passenger train at goods train rates were small packages of linen, and that it had no bearing on the complainant's pig traffic. The complainant pointed out that his traffic was denied the facilities afforded to the English traffic, and therefore he was concerned. The Company replied that the complainant was in no way prejudiced by the English traffic being conveyed by passenger train, as if they were to run a goods train to carry the English traffic it would involve them in unnecessary outlay and would not benefit the complainant, whose traffic did not compete with the traffic from England. A copy was sent to the complainant, from whom no further communication on the subject was received.

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
	1891.				
23	Oct. 31	W. N. White & Co., Limited, Covent Garden.	Great Eastern and Great Northern.	That in the case of potatoes consigned from Littleport and Burnt Fen on the Great Eastern Railway a charge of 13*s.* 4*d.* per ton was made for conveyance to King's Cross, while the charge by the Midland Railway to St. Pancras was only 9*s.* 2*d.* per ton.	After correspondence the complainants were pleased to inform the Board of Trade that, owing to their intervention, the Great Northern Railway Company had agreed with the Great Eastern Railway Company to bring potatoes to King's Cross at the same rate as that charged on the Midland route to St. Pancras.
24	Oct. 31	Belfast and Mersey Steam ShipCompany, Limited(S. Lawther & Sons) and certain Belfast firms.	Lancashire and Yorkshire, Midland, and North-Eastern.	When the Irish Railway Company had conceded through rates to this Steam Ship Company (see case No. 10, page 11), the latter, supported by certain Belfast firms, applied for similar treatment from the English Railway Companies.	The Lancashire and Yorkshire and North-Eastern Railway Companies replied that as they did not use, maintain, or work, and were not parties to any arrangement for using, maintaining, or working any vessels of the Belfast and Mersey Steam Ship Company, for the purpose of carrying on communication between Liverpool and Belfast, the applicants were not entitled to call upon them to arrange a through rate. The Board of Trade communicated the reply of the railway companies to the complainants, with an intimation that the case was not one in which they could intervene under section 31.
25	Nov. 2	W. Ramsey, Cupar	North British -	That the Company now charged him 3*s.* per ton for the conveyance of certain packed manures between Tayport and Cupar, a distance of 12 miles, whereas he had formerly been charged but 2*s.*, and that he had failed to get the Company to show the composition of the rates.	The Company replied that the rates complained of were all within the existing statutory powers of the Company, so far as they are applicable to conveyance alone, and that the rate books at their stations contained all the information required by the Acts of Parliament. A copy was sent to the complainant, who repeated his complaint, and mentioned that legal proceedings were pending between him and the Company. The Board of Trade informed him that no advantage seemed likely to arise from their further intervention.
26	Nov. 4	J. W. Beeton, Barrow-on-Humber.	Manchester, Sheffield, and Lincolnshire.	That the arrangements for dealing with goods traffic at New Holland Station were unsatisfactory, owing to the number of sidings that had to be crossed, and that considerable delay had recently occurred in bringing away a consignment of willows.	The Company replied that the delay in the case mentioned in the complaint was caused by a mistake on the part of their foreman at the station, who was under the impression that they were not bound to find men to assist in unloading traffic of that description. They hoped that no similar cause for complaint would arise in the future. A copy was sent to the complainant.
27	Nov. 5	Price Jones, Abergele.	London and North-Western.	That a consignment of cattle loaded at Llanrwst at 1 p.m. on October 26th, did not arrive at Canterbury until 6 a.m. on the 29th instead of 6 p.m. on the 27th, the cattle having been all the time without food or water.	The Company replied that the animals were despatched from Llanrwst at 3.56 p.m. on the 26th October, and were forwarded to the London, Chatham, and Dover Company from Willesden at 3.40 pm. on the 27th, delivery being made to that Company at Stewart's Lane at 5 p.m. on that day. In ordinary course the animals would have arrived at Willesden at 9.15 a.m. on the 27th, and would then have gone forward by a special train at 10 a.m.; but in consequence of one of the beasts falling down, the waggon had to be put alongside the pens at Stechford, Rugby, and again at Willesden, in order to raise the animal, and thus delay, although unavoidable delay, occurred. The Company added that they could not learn that any request had been made by the sender that the stock should be watered or fed, but that the staff at Willesden did supply the animals with water. A copy was sent to the complainant, from whom no further communication was received.

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
28	1891. Nov. 20	Greaves, Bull, and Lakin, South Wharf, Paddington.	Great Western -	That the rates charged for the conveyance of coke from Leamington to Harbury siding (Southam Road), a distance of seven miles, were unreasonable, viz., 1*s.* 1*d.* per ton in owners' waggon, and 1*s.* 7*d.* in company's waggons, and that when asked to dissect the rate, the Company stated that their practice was first to deduct the charge they are entitled to make for conveyance only, and to attribute the balance, if any, to terminal and other services, a practice which the complainants contended rendered the law inoperative.	The Company replied that under existing powers the charge for conveyance was 8*d.* per ton, leaving 5*d.* per ton for terminal accommodation, consisting of station and sidings at Leamington, and land junction and sidings at Southam Road, and terminal services, including shunting, marshalling, signalling, &c., and for returning the owners' waggons when empty. That by public notice the Company had stated that they are not common carriers of coke. That they had come under no obligation to supply waggons, but that at the request of the Leamington Gas Company they had from time to time provided waggons for certain consignments, and that the charge to the complainants for doing so had been fixed at 6*d.* per ton. This sum having regard to the load (about four tons) and the length of time which the waggons were occupied, had prevented the Company from volunteering to provide waggons. The complainants replied that they questioned the legality of the notice referred to above, and that in providing waggons the Company became carriers, and if so the charge of 6*d.* per ton was incorrect, as the statutory charge of 8*d.* per ton included waggons and every expense incidental to conveyance. That with regard to the charge of 5*d.* per ton for terminal accommodation and services, they wished to be furnished with details of the respective charges. After further correspondence a conference with both parties was held at the Board of Trade. The complainants were subsequently informed, that the question the Board of Trade were asked to decide related rather to the legal interpretation of sections of an Act of Parliament governing the Company's powers of charge than to the fairness or reasonableness of the action of the Company. The Board of Trade had no power to determine such a question, and were unable to say that the rate was in itself unfair or unreasonable, nor were they satisfied that the Company had acted in other respects in an oppressive or unreasonable manner.
29	Dec. 6.	J. Price Rogers, Plymouth.	Great Western -	That while the distances from Plymouth to London and Birmingham respectively are practically the same, the rates for conveyance of various kinds of fish to Birmingham are 9*d.* to 1*s.* 6*d.* per cwt. higher than the rates to London, thus militating most seriously against the successful competition of Plymouth with the fish industries of the north in the Birmingham market.	The Company replied that the rates to Birmingham referred to by the complainant are for conveyance by passenger train, whereas the rates to London are for conveyance by goods train and by trains run exclusively for perishable traffic. These rates will come under review in the revision now being made, and it may be found necessary to increase the rates to London so as to bring them more in accord with the rates to Birmingham. A copy was sent to the complainant, from whom no further communication was received.
30	Dec. 8.	Londonderry Port and Harbour Commissioners.	Londonderry and Lough Swilly.	That though the waggons which come on to the Commissioners' tramways at Londonderry to be loaded or unloaded are hauled to and from the different railway companies' premises by the engines and staff of the Commissioners, who make	The Board of Trade informed the Commissioners that the legality of the charge was not a question which they could decide, but that they would forward a copy of the complaint to the railway company and invite their observations. The Company replied that they had no observations to offer, and that it was

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
				a charge for the service, the railway company in question has recently made a charge of 1*s.* for each waggon coming upon the tramways in addition to their ordinary rate for carriage, &c., though the other two railway companies make no such charge.	quite true that they made a charge of 1*s.* per waggon for the use of their waggons when taken away from the Company's premises at Londonderry. A copy of the reply was sent to the complainants, from whom no further communication was received.
31	1891. Dec. 14.	W. Ward, Churwell Collieries, near Leeds.	Midland - -	That the Company stopped the running of one of the complainant's waggons on the ground that it had not been "rebuilt according to specification," and that the Company had failed to supply him with any such specification, or to intimate in what respect the waggon was deficient.	The Company replied that as the result of a suggestion thrown out by the Board of Trade, the railway companies drew up a specification for the building and rebuilding of waggons in the interests of safety in running. Copies of the specification were sent by the Midland Company to all persons known to them as running waggons on their system, but the complainant was not known to them in that capacity, though it was believed that he obtained a copy from the London and North-Western Company. The complainant's waggon was stopped because it had been rebuilt without compliance with the specification. A copy of the reply was sent to the complainant, from whom no further communication was received.
32	Dec. 29.	J. H. Stone, Hammersmith.	Metropolitan District.	That he was compelled to take a passenger ticket in respect of a cistern weighing 17 lbs. which he was carrying with him on a journey in the course of business from Hammersmith to Hounslow.	The Company replied that the article was merchandise carried for the purpose of business that it weighed 35 lbs., and that even if its weight were only 17 lbs., as stated by the complainant, the charge of 6½*d.* was well within the Company's powers. A copy was sent to complainant, from whom no further communication was received.
33	1892. Feb. 9.	Samuelson & Co., Limited, Britannia Works, Banbury.	London and North-Western.	That the rates charged for the conveyance of blowers are excessive compared with the rates charged for other machines.	The Company replied that blowers come under the term "Blowing Engines" in Class 3 of the Railway Clearing House classification, or in Class 2 when in cases in parts, while all the machines with which comparison had been made come under Class 1, and that Parliament had sanctioned the same classification in the Company's Rates and Charges Act, 1891. The complainants, in reply, contended that there is no similarity whatever between their blowers and what is known as a "blowing machine." The point at issue being somewhat a technical one, the Board of Trade requested Major F. A. Marindin, R.E., C.M.G., to inspect the machines in question and to report to them. Major Marindin, in his report, stated that a blower is no more a "blowing engine" than a chaff cutter driven by a belt is an engine; blowers were compact, easily handled pieces of machinery, of considerable weight as compared with their bulk, and seemed less liable to damage in transit than the machines referred to in Class 1. In his opinion it would only be reasonable to charge blowers a similar rate to the machines in Class 1. The Board of Trade sent a copy of the report to the Company and expressed a hope that they would see their way to give effect to Major Marindin's recommendation. The Company replied that the question raised affected all railway companies, and that they would take an opportunity of bringing it under notice at the next aggregate meeting of the companies at the Railway

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
					Clearing House. Ultimately the Company stated that the railway companies had arranged that from January 1st, 1893, blowers of not less weight than 1 ton would be chargeable at the 1st class rate. The complainants, however, while thanking the Board of Trade for the result of their action in the matter, were not satisfied with the limitation of weight, and in reply to an inquiry by the Board of Trade the Company stated that it was considered necessary that some distinction should be made between the large and heavy kinds of machines and those of a comparatively small and expensive description, that it was not thought that the limit of 1 ton was an unreasonable one to adopt, and that the alteration already made would result in a considerable reduction of present charges. The complainants were not satisfied with this explanation, and asked the Board of Trade to press the Company to remove the limitation. The Board of Trade replied that they regretted the decision upon this point, but that they did not consider that any advantage would result from any further correspondence.
34	1892. Feb. 12	Cannop Chemical Co., Monmouth.	Severn and Wye and Severn Bridge.	That the rates charged for the conveyance of charcoal of 2*s.* 6*d.* per ton in 2-ton lots and 1*s.* 7*d.* per ton in 4-ton lots were illegal.	In the correspondence which ensued it appeared that the charge of 2*s.* 6*d.* per ton was made up of 1*s.* for conveyance, 6*d.* for the use of trucks, which the Company are not bound to provide for any traffic, and 1*s.* for the provision of station accommodation at each end. The complainants contended that no accommodation was provided for their traffic except sidings on which to load and unload, and that the Company were not authorised to make any charge for sidings. On the other hand the Company contended that they had power to charge for accommodation other than conveyance which would include the use of sidings, and that the complaint was unreasonable. Finding it impossible to arrange an amicable settlement by means of correspondence, the Board of Trade suggested that both parties should attend at the office of the Board of Trade to discuss their differences. The complainants, however, replied that they did not consider the meeting necessary, as they could only repeat what they had already written, and under these circumstances the Board of Trade informed them that they did not see how they could take any further steps in the matter.
35	April 5	Messrs. Ellis, Ward, & Co., Snig's Foot Brewery, Ormskirk.	Lancashire and Yorkshire and London and North-Western.	That though malt and potatoes are in the same class, these companies charge 19*s.* 2*d.* per ton for malt in 4-ton lots to and from Ormskirk and London, as compared with only 17*s.* 6*d.* per ton in 3-ton lots for potatoes.	The Board of Trade replied that the complaint did not appear to be that the rate for malt was unreasonable in itself, but that malt being in the same class as potatoes it was unreasonable to charge a higher rate for malt than for potatoes, and under these circumstances they did not consider that the case was one in which they could usefully intervene under section 31.
36	April 8	Messrs. W. and T. Chesters, Nantwich.	London and North-Western.	That the rate of 10*s.* 2*d.* for the conveyance of provender from Liverpool to Nantwich is excessive, the rate from Liverpool to Crewe, which is only 4½ miles from Nantwich, being only 7*s.* 6*d.*, and that the difference in the rates prevents them competing with the Crewe merchants.	The Company replied that the rate to Nantwich was the ordinary class rate, which was below the authorised maximum rate for conveyance alone, while the rate to Crewe was exceptional, having been adopted under special circumstances. The Company added that all the rates were under revision, and that if they could see their way to make

Reference Number	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
					some modification they would be glad to do so. A copy was sent to the complainants, from whom no further communication was received.
37	1892. April 8	Railway Carriage and Waggon Builders Association (per Messrs. Hargrove & Co., 16, Victoria Street, Westminster).	Midland - -	That the Company charge for the haulage of a new waggon on its first journey, when containing merchandise belonging to others than the owner, in addition to charging for the carriage of the merchandise, though in the case of a new waggon loaded with merchandise belonging to the owner no haulage charge is made. The complainants contended that the Company had no power to make this double charge for the first journey, or to differentiate between the first journey and any other journey.	The Company replied that only one firm of waggon builders had adopted the practice when forwarding new waggons of loading them with merchandise in order to avoid payment of the haulage charge, that this firm had refused to pay the Company's charges, that the Company had offered to submit the dispute to the Railway Commissioners on a joint application, but had not received any definite reply, and that failing such an arrangement the Company proposed to take action for the recovery of the sum due. The complainants contended that the Company's letter was no answer to their complaint, as what they desired to know was whether there was any authority making the Railway Clearing House classification binding on third parties, or whether there was any Act authorising the Company to make a double charge. The Board of Trade replied that the questions appeared to be legal ones, upon which they could not undertake to give advice, but that they were not aware of any statute enacting the Railway Clearing House classification, nor did they fully understand the contention as to a double charge. The complainants were ultimately informed that the case was not one in which the Board of Trade could take action under section 31.
38	April 23	J. Ainsworth, Blackpool.	Great Eastern -	That the conveyance charges from Stoke Ferry Station to Blackpool of 3*s.* 3*d.* for 40 lbs. of jam and 5*s.* 1*d.* for a sack of potatoes, including delivery but not collection, were excessive.	The Company replied that the complaint arose in consequence of there being no through rates for which no application had been made or they would have been put in operation. Through rates were now being arranged, and the new charges would be 2*s.* 5*d.* and 3*s.* 5*d.* instead of 3*s.* 3*d.* and 5*s.* 1*d.* A copy of the reply was sent to the complainant.
39	May 19	W. S. Scott & Co., Birmingham.	Great North of Scotland.	That the Company treat them unfairly and unreasonably in requiring prepayment from the consignor for the carriage of fish sent to them from Peterhead, and that as other firms in Birmingham are not treated in a similar manner, the Company are subjecting them to "undue or unreasonable prejudice," contrary to section 2 of the Railway and Canal Traffic Act, 1854.	The Company stated that the rule of the Railway Clearing House, is to charge for the carriage of fish on "the gross weight at the sending "station without deduction for sub-"sequent diminution in weight by "leakage," and that the complainants having repeatedly refused to pay carriage except on weight ascertained at Birmingham, there was no alternative but to require prepayment, the senders being allowed every facility for seeing that the weight charged was correct. The Company added that the requirement would be withdrawn when the complainants agreed to comply with the conditions as to weight, the same as other firms. The complainants replied contending that the action of the Company in requiring prepayment was illegal, and asking the Board of Trade to order an unconditional withdrawal of the restriction. The Board of Trade informed the complainants that having made inquiry, they understood that the practice of charging upon the actual gross weight as consigned from the forwarding station was a general one, and that it was adopted after careful investigation about 12 years ago. In reply to further communications from the complainants, the

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
					Board of Trade stated that they had no power to compel the railway companies to make an allowance for leakage, and that with regard to prepayment they did not consider it was a question in which they should intervene, or which they had power to determine, as the complainants supposed, under Part V. of the Railway Rates and Charges Order Confirmation Acts, 1891 and 1892.
40	1892. June 7	Burnard and Alger, Limited, Castledown Wharves, Plymouth.	Great Western and London and South-Western.	That these Companies treat them in an unreasonable manner, in not allowing them to have their traffic conveyed from their wharves and sidings at Cattewater on the London and South-Western Railway to stations on the Great Western Railway. The complainants asked the Board of Trade to say that they were entitled to have their traffic conveyed at through rates from Cattewater, and that the rates should be the same as from Millbay Station on the Great Western Railway.	The London and South-Western Railway Company replied that they had never declined to received traffic at Cattewater for stations on the Great Western Railway, and that they were not only willing but anxious to agree through rates with the Great Western Railway Company. The Great Western Company replied that they had no objection to conveying complainants' traffic at through rates, and that this had only been possible since the alteration of gauge at the end of May, but that they could not agree to the same rates applying as from Millbay, as they would have to pay the London and South-Western Company for the use of their railway and for services. A copy of these replies was sent to the complainants, and ultimately the Board of Trade informed them that both Companies having agreed to through rates, the only question still in dispute appeared to be whether the complainants were entitled to the same rates from Cattewater as the Great Western Company charge from Millbay, and that this was a question which they considered might more properly be brought before the Railway and Canal Commissioners for adjudication.
41	June 7	Messrs. McCallum Bros., Dingwall.	Highland - -	That the Company charge 12*s.* 6*d.* per ton for the carriage of potatoes from Dingwall to Forsinard, while to Thurso, which is 30 miles further, the charge is only 10*s.* per ton.	The Company replied that the rate of 10*s.* per ton had been in existence for many years to compete with sea carriage from Invergordon, and that Forsinard being an inland station the same conditions did not apply. That the rate of 12*s.* 6*d.* per ton was largely within the Company's powers, and was a reasonable rate for the distance—94 miles—being only 1·6*d.* per ton per mile, and that it applied to all traders, so that there was no undue preference. After further correspondence the Board of Trade informed the railway company that they were not satisfied that the higher charge for traffic conveyed over a less distance on the same line of railway was fair or reasonable, having regard to the lower charge from Invergordon to Thurso. The Company, in reply, contended that the cost of working traffic to Thurso was less, and that their remuneration was even greater upon the lower rate than upon the higher one. A copy of the correspondence was forwarded to the complainants, from whom no further communication was received.
42	June 18	S. Bendall, Huntingford Mills, Charfield.	Midland - -	The complainant again complained (see complaint No. 11, page 11) of the rates on flour from Charfield to Forest of Dean stations, and also of the rates to Clevedon, Weston-super-Mare, and other stations below Bristol, the rates from certain places further off being the same or less.	The Company replied that the rates to the Forest of Dean were adjusted and placed on a mileage basis on February 1, 1892, upon the previous complaint of Mr. Bendall and upon the complaint of Messrs. Kimmins, Drew, & Co., and that with regard to the rates to Clevedon, &c., the Great Western Railway Company would put into force, until the 1st January 1893, when the revised

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
					rates come into operation, the same rates as are charged from Gloucester A copy of the Company's reply was sent to the complainant, who replied that for the present he would accept the rates as they now stood.
43	1892. June 22	T.J.Redler,Taunton	Great Western -	That the rate on grain from Bristol to Taunton of 4*s.* 9*d.* per ton in 4-ton lots is unfair compared with the rate of 5*s.* to Exeter, which is 31 miles further.	The Company replied that the rate of 4*s.* 9*d.* to Taunton was a low one, which could not possibly be reduced, and that the still lower rate in proportion to distance of 5*s.* to Exeter was the result of sea competition and competition from Plymouth. A copy of the Company's reply was sent to the complainant, from whom no further communication was received.
44	July 19	The Distillers Co., Limited (per A. C. McDougall), Glasgow.	Midland - -	That the Company give Belfast an undue preference over Glasgow with regard to the conveyance of yeast to Leeds, only the goods train rate of 37*s.* 6*d.* per ton, including delivery, being charged, though the traffic conveyed from Barrow is by passenger train, while the passenger train rate from Glasgow is 55*s.* per ton, exclusive of cartage, the special goods rate being 25*s.* 10*d.* per ton.	The Company, in reply, stated that the traffic was conveyed from Barrow by passenger train for their own convenience, that the distance from Belfast was 16 miles further than from Glasgow, the rate 37*s.* 6*d.* as against 25*s.* 10*d.*, and the time occupied on the journey two hours and sometimes seven hours longer. A copy of the Company's reply was sent to the complainants, who then asked whether, as the traffic was conveyed by passenger train from Barrow, the Board of Trade would intervene. The Board of Trade replied that the case was not one in which they were disposed to interfere.
45	July 28	J. Milligen, Belfast	Great Northern (Ireland).	That during eight months of the year it is very seldom the Company provide sufficient waggons to deal with his coal traffic, and that they do not allow traders reasonable encouragement to provide private waggons.	The Company replied that they had an ample supply of waggons to meet ordinary requirements, but that during the summer season it was an utter impossibility to supply enough waggons to meet the requirements of the steamers arriving at the various ports, and they complained that their waggons were subjected to serious delays by the complainant. After further correspondence the Board of Trade instructed one of their inspecting officers to make local inquiries with regard to the complaint, but before he did so the complainant informed the Board of Trade that theCompany were making arrangements to give him a better supply of waggons, and were adding a number of waggons to their stock, and, if so, it was not necessary for the inspecting officer to make his inquiries. Under these circumstances no further action was taken upon the complaint.
46	Aug. 8	Herbert Clarke, Limited, King's Cross.	Great Northern and Great Eastern.	That the rates charged by these Companies for the conveyance of coal to Barnet, Enfield, Edmonton, Potters Bar, &c., which are from 8 to 15 miles north of London, are from 11*d.* to 1*s.* 2*d.* more per ton than the rates to London, though the distance is so much less.	The Great Northern Railway Company, in reply, justified the higher rates for the shorter distances on the ground of sea competition to London, and the difference in the cost of working the large quantity of coal consigned to London as compared with the comparatively small quantity consigned to the local stations in question. A somewhat similar reply was received from the Great Eastern Railway Company. The complainants, in reply, complained of the unfairness and inequality of the rates in comparison with the rates to certain places south of London. The Board of Trade informed complainants that the complaint appeared to relate to general inequality of charge, the remedy for which was equal mileage rates, a principle of charge which had been

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
					condemned after parliamentary and other inquiries, and that no complaint was made that the rates were in themselves unfair or unreasonable, but that they were so in comparison with other rates. The Board of Trade suggested that they should await the result of the revision of rates which was being made by the railway companies.
47	1892. Aug. 19	Messrs. McArthur, Scott, & Co., Glasgow (per Mansion House Association on Railway and Canal Traffic).	North British -	That the rates charged for the conveyance of dyewood liquors from Glasgow to certain English towns are excessive compared with the rates charged to certain other English towns, and from Bury to certain Scotch towns, and that the rates for dyewood liquors and dyewood ground should be assimilated.	The Company replied that, at the request of the complainants, they charged the same rates on local traffic in dyewood liquor and dyewood ground, although the latter is in a lower class both in the Clearing House classification and in the revised classification, and that to meet the complainants they had endeavoured to arrange, and in some instances, had succeeded, favourable rates to stations in England. A copy of the reply was sent to the complainants, who then stated that their complaint also applied to the companies concerned in the through routes; but the Board of Trade pointed out, in reply, that the complaint had not yet been formulated in such definite terms against those companies to justify the department calling upon them for an explanation. A further complaint against the companies concerned in the through routes was recently received, and will be included in the next report.
48	Aug. 20	Messrs. J. Pidcock & Co., Nottingham (per Mansion House Association on Railway and Canal Traffic).	Manchester, Sheffield, and Lincolnshire, Great Northern, Midland.	That although they perform all terminal services and provide terminal accommodation at their siding at Retford adjoining the Manchester, Sheffield, and Lincolnshire Railway, the Companies named charge rates which include terminal services and decline to grant any rebate, though the Great Northern and Midland Companies grant a rebate under similar circumstances to their competitors at Burton.	The Companies replied that they were justified in making equal rates for the station and siding traffic, because the Manchester, Sheffield, and Lincolnshire Railway Company have to provide additional siding space for the complainants' traffic, and to perform special shunting and marshalling services. The Companies added that the circumstances at Burton referred to in the complaint are entirely different. After further correspondence a conference was held at the Board of Trade at the request of the complainants. The complainants contended not only that no station accommodation is provided by the Companies, but that the only services performed by the Companies after putting the traffic into the siding is to provide the services of one man for the purpose of sheeting and unsheeting and of rendering partial assistance in loading and unloading. On the other hand, the Companies contended that the complainants' traffic was more expensive to deal with than traffic using the station; it had to be backed through the goods yard at the station in order to get to the siding, and delay was caused in dealing with the rest of the station traffic. The Board of Trade subsequently stated that, in their opinion, the total charge for siding traffic should not be the same as for traffic on which a station terminal is properly chargeable, and that they would be glad to learn that the Companies had seen their way to reduce the charges made to the complainants. The Manchester and Sheffield and Lincolnshire Railway Company in reply stated the difficulty they experienced in accepting the view expressed by the Board of Trade, and the case being an important one they would like a further opportunity of considering the question before coming to a final determination. At the date of making this Report no further communication had been received from the Company.

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
49	1892. Sept. 5	Messrs. Hurrell & Co., Great Western Dock, Plymouth (Corn Factors and General Commission Merchants).	Great Western -	That the Company charge for hauling trucks from alongside ships or stores in the Great Western Docks to Plymouth Station for despatch, while no charge is made by the Company to their competitors at Bristol for a similar service.	The Company replied that their charge was, beyond question, a reasonable one, and that the docks at Bristol were the property of the corporation, who made their own charges for the services they rendered. The complainant replied, stating that the services at the Bristol Docks were not performed by the corporation, but by the railway company, who make no extra charge, though for a similar service at their own docks at Plymouth they make a charge of 9*d.* per truck. The Company in a further letter, a copy of which was sent to the complainants, stated that from January 1st, 1893, their charge for haulage services, &c. at Plymouth Docks had been included in the consolidated grain rates and no separate charge made.
50	Sept. 17	G. Wheeldon, Maltster, Derby (per Mansion House Association on Railway and Canal Traffic).	Midland - -	That the Company decline to allow him a rebate in respect of the services of loading and unloading performed by his own men on his own siding, and in respect of his saving the Company the expense of station accommodation, although they allow a rebate for services of a like nature to his competitors at Burton.	The Company replied that the siding was not one which the Company could be compelled to permit under the Railway Clauses Act, 1845, and that its existence did not save them any expense for station accommodation or in working the traffic. The question of obligation to make same rebate as at Burton was decided by the Railway Commissioners (Girodot, Flinn, & Co. *v.* Midland Railway Company), and the decision was strictly acted on. The complainants replied distinctly controverting the statements made by Company. The Company, in a further letter, defended the practice, which they have continued under their new powers, of charging the same rates upon the complainant's siding traffic as they do upon traffic unloaded at Derby Station, and contended that, to make any difference in the charge, would introduce complications and would involve an increase in the station rates, which would not be productive of advantage. At the request of the complainants a conference was held at the Board of Trade. It appeared that the complainant's traffic, in order to reach their siding, has to be taken through the goods yard of the station, where the Company perform certain services such as marshalling and sorting; but in the case of train loads of traffic which are occasionally sent, traffic went direct into the siding. The Company contended that the marshalling and sorting services they usually have to perform justified a charge equal to that levied on station traffic. The Board of Trade subsequently stated that, in their opinion, the total charge for siding traffic should not be the same as for traffic on which a station terminal is properly chargeable, and that they would be glad to learn that the Company had seen their way to reduce the charges made to the complainants. The Midland Railway Company in reply stated the difficulty they experienced in accepting the view expressed by the Board of Trade, and as the case involved important and far-reaching questions of principle, they asked to be allowed for the present to defer giving any definite or final answer. At the date of making this Report no further communication had been received from the Company.

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
51	1892. Oct. 6	Alfred Amos, Hop-grower, Wye, Kent (per Mansion House Association on Railway and Canal Traffic).	South-Eastern -	That the rate of 2*s.* 3*d.* per pocket for the conveyance of hops from Wye to London (58⅔ miles) is unfair and unreasonable in comparison with the rates charged from Chartham (65 miles), 2*s.* 3*d.*, Chilham (63 miles), 2*s.* 1*d.*, Ashford (54 miles), 2*s.* 3*d.*, and Pluckley (43¼ miles), 1*s.* 11*d.*, and that by the differentiation of rates he is unduly prejudiced.	The Company, in reply, contended that competition justified a reasonable departure from what might by termed mileage rates, as such rates would prevent competition, and that the complainant benefits by the rate from Ashford being the same, and that he would not benefit by the rate from Chilham being raised to 2*s.* 3*d.*, while if the rates were fixed according to distance, the rate from Wye should be more than the rate from Ashford. The complainant replied that the rate from Ashford did not benefit him, as it was unduly high in comparison with the rate from Pluckley, where there was no competition, that he would benefit indirectly by the rate from Chilham being raised, and that the rate from Wye was not one which could be justified under section 27 of the Railway and Canal Traffic Act, 1888. After further correspondence the Mansion House Association informed the Board of Trade that the complainant did not propose to proceed any further as the Railway Company had modified the rate of which he complained.
52	Oct. 14	Messrs. J. and J. Garroway, Netherfield Chemical Works, Duke Street, Glasgow (per Mansion House Association on Railway and Canal Traffic).	North British -	That in direct violation of a contract between them and the North British Railway Company, they are charged higher rates upon their traffic than are charged to other traders for the same description of traffic.	The Board of Trade doubted whether they could properly intervene, owing to pending litigation, but at the express wish of the complainants they communicated with the Company upon the subject. From the reply of the Company and a further communication from the complainants, it appeared that although the rates complained of were charged at a different period to those which formed the subject of pending litigation, they were practically of the same nature, and the Board of Trade thereupon informed the complainants that they could not properly enter into a discussion which would necessarily raise questions cognate to those then before the Court.
53	Oct. 21	W. Ramsey, Eden Bone Mills, Cupar, Fife.	North British -	That the Company charge him beyond their maximum powers for the conveyance of packed manures.	The Company replied that the rates quoted by the complainant were the maximum rates which the Company were authorised to charge, exclusive of terminal charges, for the conveyance of dung and compost, which the complainant alleged should also apply to his packed manures. The complainant was not satisfied with the Company's reply, and the Board of Trade informed him that the dispute turned upon the question whether the rates complained of were or were not within the maximum powers of the Company, which was a question they had no power to determine.
54	Nov. 21	Messrs. Cory, Brothers, & Co., Limited, Bute Docks, Cardiff (per Messrs. Ingledew, Ince, and Colt).	Great Western -	That the Company charge them 1*s.* 4*d.* per ton for 14 miles for the conveyance of coal from Resolven to Swansea, while from certain collieries about 28 miles from Swansea only 1*s.* 9*d.* per ton is charged.	The Company explained that the proportionately lower rates for the longer distances were due to competition, and in order to secure the traffic, which would otherwise go to Cardiff instead of Swansea. The complainants, in reply, strongly urged that their disproportionately high rates should be reduced. After further correspondence a conference was held at the Board of Trade, at which the Company's representative was informed that in the opinion of the Board of Trade the case was one in which the Company should make some concession. The Company afterwards wrote (June 2nd, 1893), that they were willing to allow a rebate of 1*d.* from the rate of 1*s.* 4*d.* per ton for the

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
					next 12 months as an experiment, upon condition that not less than 2,500 tons per month are sent. A copy of this letter was sent to the complainants.
55	1892. Nov. 29	The Uttoxeter Brewery, Limited.	Great Northern -	That the rate of 20*s.* 8*d.* per ton for the conveyance of beer from Uttoxeter to London, 141 miles, is too much compared with the rate of 12*s.* 4*d.* per ton from Burton to London, 127 miles, and considering the difference in mileage.	The Company stated (April 24, 1893) that the companies interested had agreed to reduce the rate from 20*s.* 8*d.* per ton to 17*s.* 6*d.* per ton, station to station, minimum two tons, to take effect from the date of the letter. A copy of the Company's reply was sent to the complainants.
56	Dec. 8	G. Lester, Stoke-on-Trent.	London and North-Western.	That the Company demand prepayment for the conveyance of stone from Mold to Stoke-on-Trent, while they do not do so on similar traffic from Holywell.	The Company replied that they could not find that the complainant had tendered any stone for conveyance from Mold but that they had demanded prepayment from a trader, with whom they had reason to believe the complainant was in some way connected, owing to his having refused to pay the proper rates. The Company had since been advised that the rates would be paid without demur, so instructions had been given that the traffic could be sent without prepayment when required. A copy of this reply was sent to the complainant.
57	Nov. 26	A. Robinson, Norwood Steam Flour Mills, Southall.	Grand Junction Canal.	That he is charged a toll of $8\frac{1}{2}d.$ per ton on flour and grain from Brentford to Southall, a distance of about five miles, while millers at West Drayton, which is about nine miles from Brentford, are only charged $7\frac{1}{4}d.$ per ton.	The Company explained that traffic to Southall was subject to a short distance lockage charge of eight miles, and that traffic beyond eight miles was charged a reduced toll, which had the effect of reducing the toll to West Drayton below the toll to Southall. The Company, however, allowed the complainant a reduction of 3*d.* per ton when his traffic is in a boat, which also contains traffic going on to West Drayton. The complainant was not satisfied with the Company's explanation, and a conference was then held with both parties at the Board of Trade. The Company justified the higher charge for the shorter distance by reference to their maximum powers, but admitted that the charge was anomalous, and would probably be remedied as a result of the revision of the Company's powers now under the consideration of the Board of Trade. The only way at present they could meet the complaint was to raise the toll to West Drayton, as if they reduced the complainant's toll they would have to reduce all their short distance charges, and this they could not afford to do. The Board of Trade subsequently informed the Company, that the difference between the higher toll charged in respect of the complainant's traffic and the toll charged in respect of traffic conveyed between Brentford and West Drayton was a reasonable ground for complaint, and that the Company had failed to show sufficient justification for the difference. The Company, however, replied that at present they did not see their way to make any alteration. A copy of the correspondence was forwarded to the complainant.

THE RAILWAY AND CANAL TRAFFIC ACT, 1888.
(SECTION 31.)

FOURTH REPORT

BY THE

BOARD OF TRADE

OF

PROCEEDINGS UNDER SECTION 31

OF THE

RAILWAY AND CANAL TRAFFIC ACT, 1888.

Presented to both Houses of Parliament by Command of Her Majesty.

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THE RAILWAY AND CANAL TRAFFIC ACT, 1888.

(Section 31.)

Fourth Report by the Board of Trade of proceedings under section 31 of the Railway and Canal Traffic Act, 1888.

TO THE PRESIDENT OF THE BOARD OF TRADE.

Sir, January 1894.

I have the honour to report the proceedings which have been taken with reference to complaints made under section 31 of the Railway and Canal Traffic Act, 1888, during the twelve months ended 31st December 1893.

As you are aware, that section provides that,—

(1.) "Whenever any person receiving, or sending, or desiring to send goods by any railway is of opinion that the railway company is charging him an unfair or an unreasonable rate of charge, or is in any other respect treating him in an oppressive or unreasonable manner, such person may complain to the Board of Trade.

(2.) "The Board of Trade, if they think that there is reasonable ground for complaint, may thereupon call upon the railway company for an explanation, and endeavour to settle amicably the differences between the complainant and the railway company."

The clause imposes upon the Department the duty of endeavouring to arrange the differences between traders and railway companies which, in some instances, might be brought before the law courts, but which the Legislature appear to consider might be usefully dealt with by the friendly action of the Department.

The Board of Trade have no power to enforce their decisions, and the only sanction of the clause is a report to Parliament under sub-section 4 of the section, which provides that,—

(4.) "The Board of Trade shall from time to time submit to Parliament reports of the complaints made to them under the provisions of this section, and the results of the proceedings taken in relation to such complaints, together with such observations thereon as the Board of Trade shall think fit.

The procedure observed in previous years has not been varied. The complaints have been sent to the companies for their observations; the complainants have replied upon these observations; and when the correspondence has advanced to a point at which it has appeared that the issues could be properly discussed verbally, conferences have been arranged at the Board of Trade at which the matters in dispute have been talked over with a view to amicable settlement.

During the twelve months ended December 31st, 1893, 96 new complaints under section 31 have been received and investigated.

It must be understood that this figure does not represent the whole of the correspondence with the companies which has taken place on the subject of Railway Rates.

On the 16th December 1892 the companies promulgated in their Rate Books the revised rates which were to come into force on the 1st January 1893, and, at once, complaints of these rates began to flow in to the Board of Trade in very large numbers.

The general correspondence on the subject has been laid before Parliament. I may state, however, that upwards of 1,100 communications, enclosing nearly 2,300 complaints, were received by the Board of Trade mostly during the early part of 1893, and were brought day by day under the notice of the Railway Companies' Association and the railway company or companies concerned. The energies of the staff were severely taxed

in dealing with the enormous mass of correspondence arising out of these complaints, and I am justified in referring with satisfaction to the valuable assistance which was rendered by Mr. Stoneham, the clerk in charge of this correspondence, and the gentlemen who assist him in dealing with this work.

Continuing the analysis adopted in my previous report I show in the following statements the nature and results of the complaints.

NATURE of COMPLAINTS under SECTION 31 of the RAILWAY and CANAL TRAFFIC ACT, 1888.

	1st Report.	2nd Report.	3rd Report.	4th Report.	Total.
(1.) Rates unreasonable or excessive in themselves.	34	10	10	55	109
(2.) Higher rates for shorter distances on the same line.	4	14	6	8	32
(3.) Disproportionate rates or higher rates for shorter distances not on the same line.	7	13	15	24	59
(4.) Cannot be classified - - -	7	18	14	9	48
Total - - -	52	55	45	96	248
Railway companies - - - - -	49	54	44	92	239
Canal companies - - -	3	1	1	4	9
	52	55	45	96	248

RESULTS of the COMPLAINTS made under SECTION 31 of the RAILWAY and CANAL TRAFFIC ACT, 1888.

	1st Report.	2nd Report.	3rd Report.	4th Report.	Total.
(1.) Cases settled more or less to the satisfaction of the complainants.	15	21	15	32	83
(2.) Cases in which no further communication was received from the complainants, after the explanations furnished by the companies had been communicated to them.	25	11	13	19	68
(3.) Cases in which the complainants were not satisfied owing to one or other of the following causes :— (*a*) Decision of the Board of Trade that they could not take any further action after receiving the explanation of the company. (*b*) Decision of the Board of Trade being adverse. (*c*) Because the complaints turned upon legal questions which the Board of Trade have no power to determine. (*d*) Because the issues involved were of too great importance to be dealt with under section 31, or (*e*) Because the disputes were referred to arbitration under the provisions of the Railway Rates and Charges Order Confirmation Acts, 1891 and 1892.	12	23	17	24	76
(4.) Cases still under consideration - -	—	—	—	21	21
Total - - -	52	55	45	96	248

It will be observed that the number of complaints dealt with was 75, the remaining 21 being still under consideration. In 32 cases the concessions made by the railway companies were accepted by the complainants either as a wholly satisfactory settlement or as partially satisfactory. It will be seen from the Appendix that in some of these instances the complainants expressed appreciation of the operation of the clause. For instance, in case No. 45, the complainants expressed their indebtedness to the clause for substantial relief without recourse to a long and expensive law suit, which

they had contemplated before being advised to appeal to the Board of Trade, and after the settlement of the two complaints made by Messrs. A. Guinness & Co., Limited (Nos. 3 and 66), a letter was received from the complainants expressing satisfaction with the results.

In 19 cases after the explanations furnished by the companies had been communicated to the complainants nothing further was heard from the latter.

In 24 instances the intervention of the Board of Trade led to no result. In 12 instances out of the 24 the Board of Trade decided that they could not take any further action after receiving the explanations of the company. In five instances (Nos. 28, 42, 67, 69, and 86) the issues involved were of too great importance to be dealt with under section 31. In two instances (Nos. 47 and 55), in which complaint was made of the allowance made by the railway company for the provision of private owners' waggons, the Board of Trade, at the request of the complainants, exercised the powers conferred upon them under the Railway Rates and Charges Order Confirmation Acts, 1891 and 1892, of referring the disputes to arbitration, and appointed the Railway and Canal Commission in each case to act as arbitrator. Up to the present these are the only disputes which the Board of Trade have been called upon to refer to arbitration under the Acts in question. In three instances (Nos. 22, 31, and 36) the Board of Trade could not take any further action owing to the decision of the companies, in one of these the company stated that they were prepared to defend their action if necessary before the Railway Commissioners, and in the others the disputes related to the charges on traffic from private sidings, a subject to which I refer later on in this report. In one instance (No. 39) the question involved was a legal one, which has since been decided in the law courts in the complainants' favour. The remaining instance (No. 11) is one to which I must specially call attention on account of the attitude adopted by the railway company. Particulars of this case are set out in the Appendix, from which it will be seen that the Great Northern (Ireland) Railway Company refused to attend a conference suggested by the Board of Trade, contending that the question involved legal issues which could not be disposed of under the conciliation clause. The Company persisted in their refusal, in spite of the pressure exercised by the Board of Trade to induce them to attend, and I regret, therefore, to have to report that the Board of Trade were thus denied the opportunity they thought reasonable of making an endeavour to bring about an amicable settlement of the dispute. This is the first occasion on which I have had to report the unwillingness of a railway company to discuss a complaint before the Board of Trade.

In my last report I specially referred to the opinion which the Board of Trade had expressed upon two complaints made by Messrs. Pidcock & Co. of Nottingham and Mr. G. Wheeldon of Derby, that the charge for traffic to private sidings was similar to that made on traffic to an adjoining station, and I alluded to the fact that the companies had experienced some difficulty in accepting the view of the Board of Trade that in these instances the charges should not be similar.

The particulars of the two cases are set out in the appendix to this report on page 10, and it will be seen that the companies have recently informed the Board of Trade that after very full consideration they could not accept the view of the Board of Trade; they added that in their opinion any general application of the principle of charging less for siding traffic than for station traffic would lead to serious difficulties and cause great dissatisfaction among the less favoured classes of traders.

I have not, as far as I am aware, expressed any opinion that under all circumstances the charge for traffic conveyed to a siding should be less than the charge for similar traffic conveyed to an adjoining station. Circumstances are conceivable in which the services rendered at a siding would justify a charge equal to that made for services rendered at an adjoining station, but nothing was more clearly substantiated in all the arguments submitted to Lord Balfour of Burleigh and myself, and also to the Joint Committee presided over by the Duke of Richmond, than that a station to siding rate was, generally speaking, and ought to be, lower than a station to station rate.

In the cases now under notice I carefully examined the various circumstances connected with the services rendered at the sidings. Though I have no desire to depreciate those services, I considered myself justified in advising the Board of Trade, and the Board of Trade adopted my advice, that the siding services did not justify the charge similar to that made for the adjoining station traffic.

The railway companies deliberately declined to adopt that view. In other words they refused to accept the decision of the Board of Trade upon a matter of no such intricacy or difficulty as to make the arbitrament of a more elaborate tribunal essential to a just decision.

All that it is possible for me to do in this report is to express regret at the decision of the companies, at the same time recognising the importance to them of the issues with regard to which the difference arose.

I may further add that the companies stated that they were quite prepared to agree with the Mansion House Association on Railway and Canal Traffic for the selection of a test case for decision, upon the understanding of each party paying their own costs. I am not aware whether this suggestion has been adopted.

Questions of foreign competition, or the rates charged on foreign traffic, were referred to by the complainants in seven instances (Nos. 4, 10, 14, 23, 29, 57, and 86), and the explanations of the companies in each case may be briefly mentioned.

In No. 4 the companies denied the statement of the complainant that goods similar to his (castings) were imported from New York to Glasgow, 3,000 miles, and thence carried by rail to London, 400 miles, at half the rate charged the complainant from Arbroath. The companies stated that the rate from Glasgow was the same whether the traffic came by sea or from local foundries.

In No. 10 the rate complained of (a rate for tomatoes, grapes, &c.) had been increased from 20*s.* to 25*s.* per ton, and the company at first expressed their inability to understand why the complainants could not pay such an increased rate on home produce, which realises a higher price in the markets than foreign produce, when the through rate on similar produce from Paris to London was 3*l.* 16*s.* per ton. Subsequently the company, having regard to the possibility of the organisation of a cartage service to London, reverted to the old rate of 20*s.* per ton, and the complainant thanked the Board of Trade for their intervention.

In No. 14 the company contended that to raise the rates on foreign grain would not benefit the complainants, but would cause inconvenience and loss to the traders of the Bristol ports and to the traders and public of Birmingham.

A copy of this reply was sent to the complainant, from whom no further communication was received.

In No. 23 the company agreed to substitute for the uniform rate of 25*s.* 10*d.* per ton, charged for the conveyance of foreign sugar to nearly all stations on their system, rates varying from 25*s.* 10*d.* to 35*s.* per ton according to distance. This the complainants regarded as a satisfactory settlement.

In Nos. 29 and 57 the complainants are traders and producers of paraffin and petroleum oil, which is conveyed in casks, and they consider that they are prejudiced by the lower rates charged on foreign oils shipped to the United Kingdom in tank vessels, discharged into storage tanks at the shipping ports, and thence carried over the railways in tank waggons provided by the owners. The companies contended that the differences in the circumstances under which the traffic is conveyed and the differences in the services rendered in each case justify the differences in the rates charged. Home producers and traders do not produce and send oil in sufficiently large quantities to be able to send it in the same manner as foreign oils are sent, and this constitutes the difficulty of dealing with the complaint. A conference was held with the various parties and the case is still under consideration.

In No. 86 the complaint was similar to that made in number 23 mentioned above, but against another company. The company contended that the object of the complainants was to increase the rates on foreign sugar in order to obtain protection in their favour, and thus increase the price of a staple commodity to the detriment of small merchants and consumers generally. The company considered that the question at issue was one of great policy, affecting the well-being of the million, and that they could only give way after the decision of an authoritative court. In this case the Board of Trade pointed out that under the circumstances, and having regard to the fact that the determination of questions of undue preference rests with the Railway and Canal Commissioners, they did not anticipate that any good result would accrue from any further negotiations in the matter under section 31.

It is not necessary that I should refer further to the details of other cases which came before the Board of Trade. These details will be found carefully set forth in the appendix to this report.

One characteristic of the complaints made in the year under notice is a tendency on the part of the traders to bring before the Board of Trade complaints involving questions of principle of great importance, very often affecting interests other than those of the complainants and the companies.

Although no efforts have been spared to suggest an amicable settlement in any of such cases in which it appeared possible to do so with a reasonable prospect of success, it cannot be considered that the clause furnishes an adequate means of dealing with such cases, or that a tribunal, which has no power of adjudicating, is sufficient for the purpose. In the words of a witty predecessor, the operation of the clause may be compared to the provision of a small hole for the kitten to go through, and that there should be such a provision is eminently desirable in the interests of many classes of traders, but the clause cannot be safely looked to for the determination of wider and more far-reaching issues arising under the various Acts dealing with Railway and Canal Traffic.

I have again to report with satisfaction a marked disposition on the part, both of the railway companies and traders to adopt, where possible, the suggestions made by the Board of Trade after the hearing of the complaints. It is to this disposition, to a willingness to accept a decision given with a view to a practical rather than a legal settlement of points of difference, that the success of the clause is principally due.

It is perhaps not proper that I should discuss the question of the effect upon this disposition if the reasonableness *in se* of a rate or charge was challengeable before a court of law, but I may perhaps express doubt whether, if all cases coming before the Board of Trade under the Conciliation Clause could be taken to a higher tribunal, both railway companies and traders would not be inclined to avoid a disclosure of their case at a hearing at which no legal settlement was possible.

I have, &c.,

COURTENAY BOYLE.

INDEX TO THE COMPLAINTS MENTIONED IN THE APPENDIX.

Name of Complainant.	Name of Company.	Page.
COMPLAINTS MENTIONED IN PREVIOUS REPORT UPON WHICH FURTHER PROCEEDINGS HAVE BEEN TAKEN.		
Cory Bros. and Co., Limited	Great Western	11
Pidcock, J., & Co.	Great Northern, Manchester Sheffield and Lincolnshire, and Midland.	10
Wheeldon, G.	Midland	16
NEW COMPLAINTS.		
Adamson, J., & Co.	Manchester, Sheffield, and Lincolnshire.	29
Admiralty, Lords Commissioners of the, *see* Lords Commissioners of the Admiralty.		
Ainsworth, J.	Great Eastern	38
Do.	Do.	38
Airdrie Coalfields, Coalmasters in the, *see* Drummond and Reid.		
Barringer, J., & Sons	Midland and other Companies	21
Bathgate Coalfields, Coalmasters in the, *see* Drummond and Reid.		
Bath Stone Firms, Limited	Great Western	11
Bear Creek Oil Shipping Co., Limited.	Do.	18
Beckett, J. T.	London and North-Western and other Companies.	30
Bendall, W.	Great Western	21
Bennett's Iron Foundry Co.	Great Northern, Great Western, Lancashire and Yorkshire, London and North-Western, Manchester Sheffield and Lincolnshire, and Midland.	14
Berg, Sons & Co.	Great Eastern	30
Bernard, T. & J.	North British	22
Bigger, W. F.	Sligo, Leitrim, and Northern Counties.	37
Biggs, G. W.	Cork, Bandon, and South Coast.	23
Birmingham Fish, Game, and Poultry Dealers' Association.	Great Western and London and North-Western.	26
Bond, G. C.	Great Northern, London and North-Western, Manchester Sheffield and Lincolnshire, and Midland.	39
Bristol Incorporated Chamber of Commerce and Shipping.	Great Western	18
Brixham Fishermen	Do.	24
Brunner, Mond, & Co., Limited	North Staffordshire (Trent and Mersey Canal) and Shropshire Union Railways and Canal.	17
Butterworth, F. J.	North Staffordshire	25
Candon, J.	Midland Great Western of Ireland.	11
Cattewater Harbour Commissioners, *see* Corporations of Plymouth and Devonport, &c.		
Clackmannanshire, Coalmasters in, *see* Drummond and Reid.		
Clark, H.	Great Eastern	38
Clee Hill Stone Companies' Association.	Great Western, London and North-Western, and North Staffordshire.	36
Coffey, F.	Great Southern and Western and Waterford and Limerick.	37
Coleraine Harbour Commissioners.	Belfast and Northern Counties	33
Cork Incorporated Chamber of Commerce, *see* Biggs, G. W.		
Cork Pig Buyers' Association	Cork Bandon and South Coast, and Cork and Macroom Direct.	36
Corporations of Plymouth and Devonport, East Stonehouse Local Board, Port of Plymouth Incorporated Chamber of Commerce, Cattewater Harbour Commissioners, Sutton Harbour Improvement Company, Stonehouse Pool Improvement Company, Plymouth Mercantile Association, and Devonport Mercantile Association.	Great Western	30
Cowdenbeath Coal Co., Limited, *see* Drummond and Reid.		
Davis, W., & Son	Great Western	29
Derbyshire Silkstone Coal Co., Limited.	Great Northern and Midland	14
Devonport Corporation, *see* Corporations of Plymouth and Devonport, &c.		
Devonport Mercantile Association, *see* Corporations of Plymouth and Devonport, &c.		
Drummond and Reid on behalf of the Cowdenbeath Coal Co., Limited, and other coalmasters of Fifeshire and Clackmannanshire.	Caledonian and North British	27
Do. do.	North British	28
Drummond and Reid on behalf of coalmasters in the Airdrie, Slamannan, and Bathgate coalfields.	Do.	30
Do. do.	Do.	30
Dungannon Town Commissioners.	Great Northern (Ireland)	31
Eames, E.	London and South-Western	
East Stonehouse Local Board, *see* Corporations of Plymouth and Devonport, &c.		
Ellis, R., & Sons	London and North-Western	19
Farrar, W. D.	Midland	16
Fifeshire Coalmasters, *see* Drummond and Reid.		
Frost, F. A., & Sons	Great Western and London and North-Western.	13
Fryer, W. H.	Severn and Wye and Severn Bridge.	24
Garroway J. & J.	North British	25
Gerrish & Co.	Kennet and Avon Canal	31
Gibbs, J. & Co., Limited	London and North-Western	16
Goodbody, M. J. & L.	Midland Great Western of Ireland.	14
Goodfellow, H.	Great Northern and London and North-Western.	31
Grand Canal Company	Great Southern and Western	33
Do.	Great Southern and Western and Midland Great Western.	34
Griffiths Brothers	Shropshire Union Railways and Canal.	16
Guinness, A., Son & Co., Limited.	Great Southern and Western and Midland Great Western of Ireland.	11
Do.	Do. do.	32
Gypsoline Co.	All Railway Companies	34
Hall & Co.	London, Brighton, and South Coast and Midland.	18
Harbin, Colonel E. H.	Great Western	35
Hughes & Co.	London and North-Western	27
James and Rosewall and the Western Counties and General Manure Co., Limited.	Great Western	27
Keith, J.	North British and other Companies.	12
Lester, G.	London and North-Western and North Staffordshire.	35
Do.	North Staffordshire	37

NEW COMPLAINTS—*continued.*

Name of Complainant.	Name of Company.	Page.
London Butchers' Trade Society.	Great Eastern	35
Londonderry Port and Harbour Commissioners.	Great Northern (Ireland)	15
Lords Commissioners of the Admiralty.	London and South-Western	28
McArthur, Scott, & Co.	Caledonian, City of Glasgow Union, North British, Great Northern, Lancashire and Yorkshire, London and North-Western, Midland and North-Eastern.	19
McCombie, J., and Co.	Caledonian and North British.	23
Mallock, Esq., M.P., R., *see* Brixham Fishermen.		
Mansion House Association on Railway and Canal Traffic, *see* McArthur, Scott, & Co., Garroway, J. & J., Waddell, J., & Sons, Woolston and Bull.		
Marsh, J. G.	Great Western	19
Do.	Taff Vale	26
Marston Brothers	Great Western	16
Morgan, M.	London and North-Western and Rhymney.	36
Morris, S.	Waterford and Limerick	34
Myatt's Hextable Horticultural Co.	London, Chatham, and Dover and Midland.	15
Newport (Alexandra) Dock Co., Limited.	Great Western	17
Newton, R.	London and South Western	38
North-Eastern Paper Mills Co., Limited.	Lancashire and Yorkshire and North-Eastern.	25
North of England Pure Oil Cake Co.	North Eastern	18
Ombler, W. H.	Do.	29
Peate, A. & A.	Shropshire Union Railways and Canal.	20
Pencoed and Dinas Powis Brick and Tile Co., Limited.	Barry	32
Plymouth Corporation, *see* Corporations of Plymouth and Devonport, &c.		
Plymouth Mercantile Association, *see* Corporations of Plymouth and Devonport.		
Robinson, J.	London and North-Western	20
Rushworth, G.	Lancashire and Yorkshire	24
Do.	London and North-Western, Midland, Caledonian, Glasgow and South-Western, and North British.	36
Rutherford, W.	North British	22
Scottish Mineral Oil Association.	Various Railway Companies	30
Scutt & Sons	Midland	36
Silk Association of Great Britain and Ireland.	North Staffordshire and other Railway Companies	31
Simpson, A., & Co.	North-Eastern	29
Slammannan Coalfields, Coalmasters in the, *see* Drummond and Reid.		
Stonehouse Pool Improvement Co., *see* Corporations of Plymouth and Devonport, &c.		
Strong and Cooper	London and North-Western and London and South-Western.	34
Sutton Harbour Improvement Co., *see* Corporations of Plymouth and Devonport, &c.		
Tate, H., & Sons	London and South-Western	19
Do.	London, Brighton, and South Coast.	37
Thomson, J.	Glasgow and South-Western	26
Waddell, J., & Sons	North-Eastern	38
Walley, S.	London and North-Western	38
Wallis, Son, & Wells	Metropolitan	35
Wardle, T.	North Staffordshire	31
Warne, C. G., Limited	Great Western	39
Watson, Todd, & Co.	Great Western, London and North-Western, and Midland.	20
West and Wright	London, Chatham, and Dover	34
Western Counties and General Manure Co., Limited, *see* James and Rosewall.		
Westlake, R.	London and South-Western	13
Whitbread & Co., Limited	Do.	32
Woolston and Bull	Midland	23

Appendix to the Fourth Report on Complaints dealt with under section 31 of the Railway and Canal Traffic Act, 1888.

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
CASES DEALT WITH IN THIRD REPORT UPON WHICH FURTHER PROCEEDINGS HAVE BEEN TAKEN.					
1	1892. Aug. 20	J. Pidcock & Co., Nottingham (per Mansion House Association on Railway and Canal Traffic).	Manchester Sheffield and Lincolnshire, Great Northern, Midland.	That although complainants perform all terminal services and provide terminal accommodation at their siding at Retford adjoining the Manchester Sheffield and Lincolnshire Railway, the Companies named charge rates which include terminal services and decline to grant any rebate. The complainants further alleged that the Great Northern and Midland Companies grant a rebate under similar circumstances to their competitors at Burton.	The Companies replied that they were justified in making equal rates for the station and siding traffic, because the Manchester, Sheffield, and Lincolnshire Railway Company have to provide additional siding space for the complainants' traffic, and to perform special shunting and marshalling services. The Companies added that the circumstances at Burton referred to in the complaint are entirely different. After further correspondence a conference was held at the Board of Trade at the request of the complainants. The complainants contended not only that no station accommodation is provided by the Companies, but that the only services performed by the Companies after putting the traffic into the siding is to provide the services of one man for the purpose of sheeting and unsheeting and of rendering partial assistance in loading and unloading. On the other hand, the Companies contended that the complainants' traffic was more expensive to deal with than traffic using the station; it had to be backed through the goods yard at the station in order to get to the siding, and delay was caused in dealing with the rest of the station traffic. The Board of Trade subsequently stated (April 1893) that, in their opinion, the total charge for siding traffic should not be the same as for traffic on which a station terminal is properly chargeable, and that they would be glad to learn that the Companies had seen their way to reduce the charges made to the complainants. The Manchester Sheffield and Lincolnshire Railway Company, in reply, stated the difficulty they experienced in accepting the view expressed by the Board of Trade, and added that the case being an important one, they would like a further opportunity of considering the question before coming to a final determination. The Companies replied (December 1893) that they were unable after very full consideration to adopt the view of the Board of Trade, which in their opinion was not justified by the facts, and they expressed the view that any general application of such a principle would lead to serious difficulties and cause great dissatisfaction among the less favoured classes of traders. They intimated, however, that they were quite prepared to agree with the Mansion House Association for the selection of a test case for decision. Each party to pay their own costs. A copy of this reply was sent to the Mansion House Association.
2	Sept. 17	G. Wheeldon, Maltster, Derby (per Mansion House Association on Railway and Canal Traffic).	Midland -	That the Company decline to allow complainant a rebate in respect of the services of loading and unloading performed by his own men on his own siding, and in respect of his saving the Company the expense of station accommodation, although they allow a rebate for services of a like nature to his competitors at Burton.	The Company replied that the siding was not one which the Company could be compelled to permit under the Railway Clauses Act, 1845, and that its existence did not save them any expense for station accommodation or in working the traffic. The question of obligation to make same rebate as at Burton was decided by the Railway Commissioners (Girodot, Flinn, & Co. *v.* Midland Railway Company), and the decision was strictly acted on. The complainant replied controverting the statements made by the Company. The Company, in a further letter, defended the practice (which they have continued under their new powers) of charging the same rates upon the complainant's siding traffic as they do upon traffic unloaded at Derby Station, and contended that, to make any difference in the charge, would introduce complications and would involve an increase in the station rates, which would not be productive of advantage. At the request of the complainant a conference was held at the Board of Trade. It

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
					then appeared that the complainant's traffic, in order to reach his siding, has to be taken through the goods yard of the station, where the Company perform certain services such as marshalling and sorting; but in the case of train loads of traffic which are occasionally sent, traffic went direct into the siding. The Company contended that the marshalling and sorting services which they usually have to perform justified a charge equal to that levied on station traffic. The Board of Trade subsequently stated (April 1893) that, in their opinion, the total charge for siding traffic should not be the same as for traffic on which a station terminal is properly chargeable, and that they would be glad to learn that the Company had seen their way to reduce the charges made to the complainant. The Midland Railway Company in reply stated the difficulty they experienced in accepting the view expressed by the Board of Trade, and as the case involved important and far-reaching questions of principle, they asked to be allowed for the present to defer giving any definite or final answer. This complaint was considered by the Railway Companies with that of Messrs Pidcock & Co. above, and their decision and suggestion as to the selection of a test case, each party paying their own costs, also apply to this case.
3	1892. Nov. 21	Cory, Brothers, & Co., Limited, Bute Docks, Cardiff, (per Messrs. Ingledew, Ince, and Colt).	Great Western	That the Company charge complainants, 1*s.* 4*d.* per ton for 14 miles for the conveyance of coal from Resolven to Swansea, while from certain collieries about 28 miles from Swansea only 1*s.* 9*d.* per ton is charged.	The Company explained that the proportionately lower rates for the longer distances were due to competition, and in order to secure the traffic, which would otherwise go to Cardiff instead of Swansea. The complainants, in reply, strongly urged that their disproportionately high rates should be reduced. After further correspondence a conference was held at the Board of Trade, at which the Company's representative was informed that in the opinion of the Board of Trade the case was one in which the Company should make some concession. The Company afterwards wrote (June 2nd, 1893) that they were willing to allow a rebate of 1*d.* from the rate of 1*s.* 4*d.* per ton for the next 12 months as an experiment, upon condition that not less than 2,500 tons per month were sent. The complainants were not satisfied with the decision of the Company, and at their special request (October, 1893) a further conference was held at the Board of Trade. The complaint is still under consideration.
				NEW CASES.	
1	1893. Jan. 2	The Bath Stone Firms, Limited, Bath.	Great Western	That "bath stone" had been placed by the Company in Class B. as coming under the description in the Revised Classification of "stone " in the rough state for " building, pitching, " &c.," whereas complainants claim that it should be in Class A., as being "stone wholly un- " dressed, straight from " a quarry."	The Company maintained that they were justified in placing bath stone in Class B., as it is consigned in oblong blocks of sizes varying from 5 cwt. to 5 tons, of which four sides are sawn and the remaining two sides are scalped or levelled at the quarries. The Company added that they had reason to believe that a satisfactory arrangement had been come to with the complainants. A copy of this reply was sent to the complainants, from whom no further communication was received.
2	Jan. 3	J. Candon, Butter and Egg Exporter, Boyle.	Midland Great Western.	That the through rate for the conveyance of eggs from Boyle to stations in England viâ Dublin is 10*s.* more than from Ballymote, which is some miles further, and the traffic from which would pass through Boyle on its way to Dublin.	The Company replied that a lower rate is charged from Ballymote in order to secure the traffic which would otherwise go by sea from the neighbouring port of Sligo. A copy of this reply was sent to the complainants, from whom no further communication was received.
3	Jan. 17	A. Guinness, Son, & Co., Limited, Dublin.	Midland Great Western and Great Southern and Western	Complaint of— 1. Increased rates for the conveyance of porter. 2. Alteration in the computation of the weight of casks.	After some correspondence an interview took place at the Board of Trade between the parties. With regard to— 1. The Companies contended that the increases complained of were principally due to the removal of anomalies which previously

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
				3. The conditions attached to owner's risk rates, and the reduction in the allowance for owner's risk. 4. No rebate in respect of traffic loaded and delivered to the Great Southern and Western Company over the complainants' siding.	existed, and to their desire to remove grounds of complaint of undue preference. The Great Southern and Western Company stated that prior to the revision their rate was the same for all distances from 95 to 160 miles. They added, however, that having regard to the large and important reductions enforced upon them by the new Rates Act, they considered they were entitled to recoup some of their losses where they could. Both Companies expressed their willingness to consider any rate complained of on its merits. 2. The Midland Great Western Company stated that, as regards empties, they had reverted to the old rates, and the Great Southern and Western Company that the arrangement in force was practically that suggested by the complainants, but they were prepared to reconsider it. 3. The Midland Great Western Company stated that they had adopted the new Owner's Risk Note which had recently been issued by the Railway Companies' Association in place of the note issued on January 1st, and the Great Southern and Western Company that they had made no alteration of the note in use last year. 4. The Great Southern and Western Company admitted that complainants were entitled to rebate in respect of their siding traffic, and they were willing to come to an arrangement in the matter. The Board of Trade suggested that, as both Companies had expressed their willingness to consider any particular rate and other matters complained of, a satisfactory result would probably be arrived at if both parties met and discussed the points together; if the result was not satisfactory, a further meeting could be held at the Board of Trade. The complainants subsequently stated that the Companies had not in all cases made the reductions they considered desirable, but seeing that in a number of cases the rates now in operation are considerably under those in operation prior to January 1st, 1893, they did not consider they could reasonably ask the Companies to make any further concessions. The complainants added that the Railway Companies had returned to the old system of average weights, and they thanked the Board of Trade for their assistance in the matter.
4	1893. Jan. 19	J. Keith, Holborn Viaduct, W.C.	North British and other Companies.	(1.) That the through rate of 41*s.* 8*d.* at owner's risk charged for the conveyance of metal castings from Arbroath to London, about 450 miles, is unreasonable, and compels complainant to send his goods by railway from Arbroath to Dundee, and thence by sea to London. (2.) That more favourable rates are charged from certain other districts and places than from Arbroath, rates of 25*s.* and 30*s.* on somewhat similar goods being charged from Falkirk to London, against 41*s.* 8*d.* from Arbroath, the distance being the same in both cases, and that similar goods to complainant's are imported from New York, carried to Glasgow (3,000 miles), and thence by rail to London, a distance of 400 miles, at half the Arbroath rate. (3.) That of the through rate of 32*s.* by the sea route, the Dundee and Arbroath Railway Company charge 12*s.* for the 16 miles between	A conference was held at the Board of Trade in this case; the complainant and representatives of the Great Northern and North British Companies being present. The complainant was asked whether he had not refused a rate of 35*s.* two years ago, to which he replied that he had not, and that the rate had not been agreed to by all the Companies concerned. The Companies' representatives, however, stated that as long ago as 1890 all the Companies agreed to a rate of 35*s.* in 2-ton lots, and in June 1890 one of the Companies reported that the complainant would not accept it. A proposal was already down for consideration at the next meeting of managers to repeat the offer. The complainant stated that the rate from Glasgow was only 25*s.* per ton, and on somewhat similar traffic (not water pipes) from Falkirk the rate was also only 25*s.* He also complained that the same rate was charged from Arbroath as from Aberdeen which is much further north. The Companies' representatives stated that the rate of 25*s.* from Falkirk was for much heavier castings sent in 4-ton lots, and that the rate from Falkirk and Glasgow on similar goods to those of the complainant was 31*s.* 8*d.* in 2-ton lots, the rate from Glasgow being the same whether the traffic came by sea or from local foundries. The distance from Falkirk was much less than from Arbroath being only 420 miles as against 486 miles. The fact of the Aberdeen rate being the same as the Arbroath rate was due to both towns being in the same group and to the active sea competition from Aberdeen. The complainant contended that the rate from Glasgow was only 25*s.* per ton, and that

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
				Arbroath and Dundee, the steamboat company receiving only 20*s.* for the remaining distance to London.	he could produce bills to prove it. With regard to the rate to Dundee the Steamship Company had informed him that in consequence of the rate being increased from 8*s.* 4*d.* to 11*s.* 2*d.* the through rate would be increased to 32*s.* 11*d.* The Companies representatives stated that the old rate of 8*s.* 4*d.* was an exceptional rate, and that the new rate of 11*s.* 2*d.* was the class rate, but an exceptional rate of 9*s.* 2*d.* had now been put in force. It was stated subsequently to the meeting that this rate had been further reduced to 8*s.* 9*d.* The Board of Trade suggested that an offer of a rate of 35*s.* per ton without a minimum of weight should be made by the Companies, and stated that they considered the adoption of this suggestion would remove the complainant's grievance. The Companies promised that the suggestion should be considered. They subsequently stated that they had agreed to a rate of 35*s.* per ton if sent in not less than 2-ton lots. The complainant complained very much of the decision of the Companies not to fully adopt the suggestion of the Board of Trade, but upon being asked whether he would be satisfied with a rate of 35*s.* without a minimum of weight, he replied that while he felt that this rate was far too high, he would be satisfied with it in the meantime as a compromise until the matter is further inquired into. The rate he suggested was 31*s.* 8*d.* without a minimum. The Board of Trade thereupon informed him that they did not consider any advantage was likely to accrue from further negotiations with the Companies upon the subject.
5	1893 Jan. 20	R. Westlake, Sack Contractor, Southampton.	London and South-Western.	(1.) That a competing firm of sack contractors are allowed to send their empty grain sacks free, whereas complainant is charged 4*d.* per cwt. (2.) That the firm in question have certain facilities granted to them by the railway company which are denied to complainant, including the use of the Company's stations as depôts, where their sacks can be hired or returned, whereas complainant has to provide his own depôt outside the station, and often at a considerable distance from it.	The Company stated that the firm referred to had been their sack contractors for the last 20 years; that sacks supplied by them are virtually for the time being the property of the Company, and that, following the practice of railway companies who supply their own sacks, these are not charged for. The complainant denied that the sacks supplied could be considered as the Company's sacks, the contract for hiring them being made with the firm and not with the Company. He further pointed out that the new regulation respecting empties placed him at a still greater disadvantage, as not only had he to pay increased rates, but he had now to pay for sacks going to be filled as well as for those returning empty. No charge was made to the firm in question in either case. The Company in reply stated that they had now returned to the old system of not charging for returned empty grain sacks. They admitted, however, that for sacks going to be filled the complainant would still be charged, while their contractors' sacks would be carried free, but they considered that their contractors were entitled to the exemption, seeing that they are under obligation to keep up a supply of sacks wherever required. A copy was sent to the complainant, who afterwards stated that he had had an interview with the goods manager, and that he hoped that the rates would now be satisfactorily adjusted.
6	Jan. 27	F. A. Frost & Sons, Chester.	London and North-Western, and Great Western.	That higher rates are charged for the conveyance of flour from Chester than from Liverpool to stations in North Wales, although the distances from Liverpool to these stations are greater than from Chester, the traffic from Liverpool having to pass through Chester; and that the station to station rate from Liverpool to Chester is 4*s.* 9*d.* per ton, whereas from Chester to Liverpool it is 5*s.*, thus placing Chester at a disadvantage as compared with Liverpool.	Both Companies agreed to reduce the Chester rates either to the level or lower than the Liverpool rates. The complainants, however, pointed out that the rates so reduced were in some cases still in advance of the 1892 rates, whereas the old Liverpool rates had been left undisturbed. The London and North-Western Company admitted that a slight advance had been made in some instances in rates for 2-ton lots, but lower rates than the old rates had been adopted for 4-ton lots, and on the whole the complainants had not good ground for complaint. With regard to the rates between Liverpool and Chester the comparison was not a proper one, the Liverpool rate being for consignments of 4 tons, while the Chester rate was for consignments of 2 tons. A copy of the reply was sent to the complainants, from whom no further communication was received.

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
7	1893. Jan. 30	Bennett's Iron-foundry Co., Ardwick, Manchester.	Great Eastern, Great Western, Lancashire and Yorkshire, London and North-Western, Manchester Sheffield and Lincolnshire, and Midland.	That exceptional rates are in force for the conveyance of castings, stoves, grates, &c. from Scotland to various stations in England and Wales, which are in some cases less than the rates for the conveyance of these articles from Manchester to the same places, and that the special rate for castings in 2-ton lots from Manchester to London has been advanced, and is only 4*s.* 9*d.* less than the rate from Scotland which has not been advanced.	The London and North-Western Company stated in reply that the companies interested had drawn up a "castings" list, and were arranging exceptional rates for the conveyance of articles in that list between the stations mentioned in the complaint, these rates to apply retrospectively from January 1st. A copy of this reply was sent to complainants, from whom no further communication was received.
8	Jan. 30	M. J. & L. Goodbody, Clara.	Midland Great Western.	That the Midland Great Western Company refuse to agree to through rates for the conveyance of flour over the Great Southern and Western and Midland Great Western Railways from Clara to Midland Great Western stations west of Athlone on the ground that they consider the traffic purely local to their line. The complainants pointed out that the route over the two railways is shorter than the Midland Great Western route.	The Company in reply contended that the traffic in question is purely local to their line, but that they had now issued rates from Clara to those stations based upon the Great Southern and Western distance to Athlone where such distance is shorter. A copy of the reply was sent to the complainants from whom no further communication was received.
9	Feb. 1	The Derbyshire Silkstone Coal Co., Limited, Newbold, near Chesterfield.	Great Northern and Midland.	(1.) That the increase since December 31st 1892 in the total through rate for the conveyance of coal from Dunstan and Barlow Junction on the Midland Railway to the sidings of the Grantham Gas Company at Grantham on the Great Northern Railway is unfair and unreasonable. The gross rate in 1892 was 5*s.* 4*d.* per ton, from which the Midland Company allowed a rebate of 1*s.* 6*d.*, making a nett rate of 3*s.* 10*d.*, but on the 1st January 1893 this was increased to 5*s.* 8*d.*, which is the sum of the local maximum rates of the Midland and Great Northern Companies. As this increase in the rate would prevent the complainants competing at Grantham, they applied to the railway companies under the provisions of section 25 of the Railway and Canal Traffic Act, 1888, for a through rate of 3*s.* 10*d.* per ton, and a truck rate of 26*s.* 10*d.*, but the Companies refused to agree to these proposals. (2.) That the increase in the rates to Grantham from competing collieries in the vicinity of the complainants' colliery had not been nearly so great, while in some cases a reduction had been made, and that the same rate is charged from Eckington as from	In reply the Midland Company stated that they had arranged with the Great Northern Company to reduce the rate from 5*s.* 8*d.* to 4*s.* 4*d.* As, however, the complainants still pressed for the re-instatement of the old rate of 3*s.*10*d.*, a meeting was arranged between the parties at the Board of Trade. The complainants pointed out that not only was the old rate increased by 6*d.*, but a still further increase had resulted from the abolition of the old practice of charging 21 cwt. to the ton. They contended that unless the old rate was restored they would be unable to compete at Grantham, and would lose the whole of the traffic, and that in the meanwhile they would suffer considerable loss, as their present contract to supply the Gas Company would not expire until May 16th, and was based on the old rate. The Railway Companies explained that to enable the collieries in their district to compete at Grantham they had in the past made large rebates off their quoted rates, but as these rebates had given rise to inequalities in the rates, and had been very unfair in their operation, they determined to abolish them when the general revision of rates took place, and to substitute an equitable system of rates based on a fair calculation of the mileage, so that one colliery should not be placed in a better position than another. They urged that the rate of 4*s.* 4*d.* was a fair rate, and was much below the maximum of 5*s.* 8*d.* per ton, and that it was impossible to reduce it as proposed by the complainants, without either making a corresponding reduction in the rates from other places, which was not what the complainants desired, or else by giving the complainants an undue preference over their competitors, which is forbidden by law. They could not agree to the proposed truck rate as the tonnage rates were based upon the principle of a full truck load, and would have to be increased if it became the practice to send less than a full truck load. As regards the same rate being charged from Eckington the Companies explained that while the distance from Eckington to Grantham by the Midland and Great Northern route is 58 miles, it is only 52 miles by the Manchester, Sheffield, and Lincolnshire route, and that rates were always calculated upon the shortest route,

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				the complainants' colliery, although Eckington is five miles further from Grantham.	and any attempt to raise the rate by the Midland and Great Northern route would only result in the traffic being sent over the shorter route of the Manchester, Sheffield, and Lincolnshire Railway at a lower rate. The Board of Trade having considered the representations made by both sides stated that they were not prepared to say that the revised rate was unfair or unreasonable in itself, having regard to the maximum powers of the Companies and to the rates charged from other collieries in the district, but they suggested to the railway companies to consider whether it was not possible to make some concession which would mitigate the effect of the increased rate during the continuance of the complainants' contract with the Gas Company. In a subsequent communication the railway companies announced that they had acted on the suggestion made by the Board of Trade.
10	1893. Feb. 2	Myatt's Hextable Horticultural Co., Swanley.	London, Chatham, and Dover, and Midland.	That the rates for the conveyance of tomatoes, grapes, &c. are unfair and unreasonable, especially when compared with the rates for foreign produce, which have not been increased in the recent revision, whereas the rates for home produce have been increased as follows :— (1) The rates from Swanley to London from 1*s.* to 1*s.* 3*d.* per cwt., and (2) the rates from Swanley to northern towns by about 33 per cent., the rates to Manchester and Liverpool having been raised from 4*s.* per cwt. to 5*s.* 5½*d.* and 5*s.* 7*d.* respectively.	The London, Chatham, and Dover Company replied that the rate charged was in accordance with their revised powers, and that they could not understand why the complainants could not pay 25*s.* per ton on home produce which realises a much higher price in the market than foreign produce, when the through rate on similar foreign produce, Paris to London, was 3*l.* 16*s.* per ton. After further correspondence the Company stated that they found that the increase in the rate would probably induce the growers at Swanley to organise a cartage service to London, and they had therefore decided to revert to the old rate, and so far as they were concerned they were also willing to go back to the old through rates. The complainants on being informed of this decision thanked the Board of Trade for the action they had taken in the matter. The Midland Company afterwards stated that it had been decided to revert to the old through rates on tomatoes and cucumbers, and to reduce the increase on grapes and other hothouse fruit to 3*d.* per cwt. A copy of this letter was sent to the complainants.
11	Feb. 3	Londonderry Port and Harbour Commissioners.	Great Northern (Ireland).	That for traffic to and from the harbour tramway, where the railway company provide no station accommodation and perform no terminal services, they charge precisely the same rate as for traffic dealt with at their Londonderry station, where they provide the station accommodation and perform terminal services.	On receipt of the complaint the railway company arranged a meeting between their goods manager and a representative of the Commissioners to settle the matter. The Commissioners afterwards stated that two representatives met and drew up a scale of terminal allowances, but subsequently the Company, acting under legal advice, declined to treat with the Commissioners, on the ground that they were not the parties with whom the Company had to deal. The Company stated, however, that they were ready to make a reasonable allowance to merchants who load or unload on the tramway, but they could not acknowledge any liability to make a rebate for station terminal, seeing that the tramway traffic used half a mile of rails on their station premises. The Commissioners denied that this portion of the line is half a mile in length, or that it is specially required by the tramway traffic, any rails other than the main line being only required for the purpose of marshalling. They stated that they owned the tramway, and hauled all the traffic thereon, that the tramway afforded all the station accommodation required, and that waggons going on to the railway were loaded and hauled to the point of junction, where they were handed over to the railway company with a forwarding note from the merchant addressed to the Company. The Commissioners contended that under subsection 5 of section 31 of the Railway and Canal Traffic Act, 1888, they had the right to complain on behalf of the traders. The Board of Trade then proposed that a conference should be held at the offices of the Board of Trade with the object of endeavouring to bring about an amicable settlement, but the Company, acting under legal advice, declined to attend, contending that the question involved legal issues which could not be disposed of under the conciliation clause, and that a meeting would therefore be productive of no benefit to anyone.

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	1893.				
12	Feb. 4	Griffiths Brothers, Liverpool.	Shropshire Union Railways and Canal.	Complainants are corn traders at Liverpool, and convey grain in their own boat from Ellesmere port to Chester. They complained that the Company charge toll on grain according to their highest class (5) on the ground that grain is not mentioned in the Company's Act, whereas when it is carried in the Company's boats it is charged under a much lower class, and that the toll charged for the nine miles between Ellesmere port and Chester of 1*s.* 6*d.* per ton of 2,400 lbs. is excessive and unreasonable.	After some correspondence, a meeting was held at the Board of Trade to discuss the complaint. During the discussion the Company stated that, under their statutory powers, they are entitled to charge a toll of 3*d.* per ton per mile, with a minimum of 2*s.* when traffic passes through a lock and does not travel 12 miles, but this minimum they voluntarily reduced in 1855 to 1*s.* 6*d.*, the present actual charge. They admitted, however, that by the tolls proposed in their revised scheddle the charge would only be 1*s.* 0½*d.* per ton of 2,240 lbs. The Board of Trade expressed the opinion that the toll of 2*d.* per ton per mile actually charged for nine miles was excessive, and suggested that the Company should at once reduce the charge to 1*s.* per ton of 2,240 lbs. This suggestion was ultimately accepted by both parties.
13	Feb. 18	W. D. Farrar, Stroud.	Midland - -	That complainant is charged rent for sidings at Stroud station occupied by his waggons beyond the period allowed for unloading, whereas no charge is made to a competing firm of coal merchants occupying the same sidings under precisely similar circumstances.	The Company stated that the same treatment is accorded to the complainant as to the competing firm in question, but that the latter had not incurred any rentcharge beyond the limits of their own siding, and that the complainant himself had not been charged rent during the three months ending February. A copy of the reply was sent to the complainant, but no further communication was received from him on the subject.
14	Feb. 18	Marston Bros., Ludlow.	Great Western	That preference is given to foreign over home grain, the rate for the conveyance of home grain from Ludlow to Birmingham, a distance of 46 miles, being 7*s.* 2*d.* exclusive of cartage, while foreign grain is conveyed from the Bristol Channel ports to Birmingham, about 100 miles, at a rate of 7*s.* 8*d.*, including cartage to mills and maltings.	The Company in reply contended that the circumstances which govern the rates from the Bristol Channel ports were not applicable to the rates from Ludlow, that keen competition exists between the Bristol, Mersey, and East Coast ports for the carriage of the food supply of Birmingham, and that the question had recently been before the Railway and Canal Commissioners, when it was shown that the public interests would suffer if the competition hitherto subsisting between the railways carrying from the respective ports were put an end to. The Company added that, while the raising of the Bristol rates would not benefit the Ludlow traders, it would cause inconvenience and loss to the traders of the Bristol ports, and to the traders and public of Birmingham, and would probably result in the traffic being driven off the railways on to the waterways. A copy of this reply was sent to the complainants, from whom no further communication was received.
15	Feb. 18	E. Eames, Alresford.	London and South-Western.	That higher rates are charged for the conveyance of milk from Alresford to Waterloo, a distance of 56¾ miles, than from Midhurst, 64 miles, from Elsted, 61 miles, from Rogate, 59¾ miles, and from Petersfield, 58½ miles, although the traffic is conveyed over the same Company's system, and under the same conditions.	The Company maintained that the Alresford rate was fair in itself, and that the rate from the Petersfield district was an exceptionally low one, which would probably have to be re-considered. They further pointed out that the circumstances were not quite the same in the two districts, only 282 churns having been conveyed from Alresford in the month of January last, against 2,120 churns from Petersfield. In reply to this statement, the complainant argued that the smaller quantity of milk sent from Alresford was due to the higher rates which are charged, and he doubted whether a much larger quantity was sent from the other stations he had mentioned than from Alresford. The Company replied that no milk was consigned from Midhurst, but from Rogate and Elsted 1,180 and 947 churns respectiveiy were consigned during January. The rates would be re-considered at Michaelmas, when the current contracts had run out. A copy of this reply was sent to complainant, from whom no further communication was received.
16	Feb. 20	J. Gibbs & Co., Limited, London.	London and North-Western.	That sulphate of alumina conveyed from London to Coventry in 20-ton lots is charged a higher rate than packed manure	In the course of correspondence the Company stated that the rate for the conveyance of sulphate of alumina from London to Coventry, which was fixed at 12*s.* 2*d.* in January last, had been reduced to 11*s.* 10*d.*, whereas last year the

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				conveyed between the same points in 4-ton lots, although the latter is of much greater value and is more damageable. The complainants contended that the rate for sulphate of alumina should not exceed, but should be less than, the rate for packed manure, as, although the latter is in the same class (C.), it is carried in smaller consignments. In support of their contention, they pointed out, that the rates for 2-ton lots of sulphate of alumina and packed manure to all stations are identical, and that from London to Liverpool the rate for sulphate of alumina (4-ton lots) is less than the rate for packed manure (5-ton lots).	rate charged was 13*s.*; that the rates for 2-ton lots of sulphate of alumina and manure are identical, because no exceptional rates are charged for either description of traffic carried in such quantities, and the ordinary Class C. rate therefore applied; and that as regards the Liverpool traffic the circumstances differed materially. A meeting was held at the Board of Trade to discuss the complaint, and upon the complainant assuring the Company that even the rate now charged was likely to stop the traffic, the Company said they would endeavour to arrange a still further reduction with the other companies concerned. The Board of Trade expressed the opinion that it was desirable that the rate should be the same as for packed manure. The Company subsequently stated that they had arranged that the rate between London and Coventry should be the same as for packed manure, viz., 11*s.* per ton in lots of four tons and upwards, station to station. The complainants were obliged for the prompt adoption of the opinion expressed, and thanked the Board of Trade for their action in the matter.
17	1893. Feb. 21	The Newport (Alexandra) Dock Co., Limited.	Great Western	That a higher rate per ton per mile is charged for the conveyance of coal from the Monmouthshire collieries to complainants' docks than to the docks at Cardiff and Penarth, in consequence of which large quantities of traffic which formerly went to Newport are now sent past it on to Cardiff. From Abercarn rates of ·80*d.* and ·76*d.* are charged to Newport Docks, while to Cardiff the rate is only ·66*d.* and to Penarth ·56*d.* From Risca the rate to Newport Docks is ·80*d.*, while to Cardiff the rate is only ·62*d.*, and to Penarth ·52*d.*	The Company stated that the rates to Cardiff and Penarth had been in operation since November 1887, and were adopted upon representations made by the Monmouthshire colliery proprietors and merchants to enable them to ship their coal (which is largely used for bunking purposes) at Cardiff; but the bulk of their coal is still shipped at Newport, only a comparatively small quantity being sent on to Cardiff. The rates to Newport from the nearest collieries were the lowest gross rates in the kingdom, and, taking into account the rate of ·875*d.* per ton per mile charged by the dock company on traffic carried over the dock line from the junction with the Great Western Railway to Alexandra Dock, the rate from Risca showed a difference in favour of Newport of $4\frac{3}{16}d.$ over Cardiff. The Cardiff rates were not unreasonable, but, if they were considered too low, they would have to be raised, with the result that the present trade, which is a special one and cannot be entirely carried on at Newport, would be destroyed, without any advantage to the complainants, and, no doubt, the colliery proprietors would endeavour to provide for the necessities of their trade by again promoting the construction of new lines. A copy of this reply was sent to the complainants, from whom no further communication was received.
18	Feb. 23	Brunner, Mond, & Co., Limited, Northwich.	North Staffordshire (Trent and Mersey Canal), and Shropshire Union Railways and Canal.	That the North Staffordshire and Shropshire Union Railways and Canal Companies decline to agree to a through toll for the conveyance of limestone in owners' or bye traders' boats from Llanymynech, situate on the Montgomeryshire Canal, viâ the Montgomeryshire and Ellesmere and Chester Canals, and the Middlewich Canal to Malkins Bank situate on the Trent and Mersey Navigation near Sandbach. The through toll proposed by the complainants was 1*s.* per ton of 2,400 lbs., the distance being 50¼ miles on the Shropshire Union Canals, and 6½ miles on the Trent and Mersey Canal which belongs to the North Staffordshire Railway Company.	Both Companies objected to the amount of through toll proposed, and the North Staffordshire Railway Company also maintained that it was premature and inexpedient to go into the question. After considerable correspondence a meeting was arranged between the parties at the Board of Trade. It was stated at the meeting that the joint toll of the two Companies amounted to 1*s.* $10\frac{1}{4}d.$, of which the North Staffordshire Company charged 1*s.* $0\frac{3}{4}d.$ for the distance of $6\frac{1}{2}$ miles on their canal. The North Staffordshire Company explained that the water used by the complainants' traffic was very expensive to them and that they made no charge for the return of the empty boat, and they contended that the proposed through toll of 1*s.* was clearly unreasonable as the other Company claimed 10*d.* of it which would only leave them 2*d.* for the use of the canal and the cost of the water. The Board agreed that 1*s.* was too low, and enquired whether 1*s.* 5*d.* would not satisfy all parties. The Companies were willing to accept this suggestion, but the complainants considered 1*s.* 4*d.* should be sufficient. The meeting separated on the understanding that the parties should negotiate between themselves to see if they could not come to an agreement. The Board of Trade were afterwards informed that all parties had agreed to the through toll of 1*s.* 5*d.* suggested at the meeting.

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19	1893. Feb. 24	Bristol Incorporated Chamber of Commerce and Shipping.	Great Western	That the area within which the Company perform free delivery from their chief Bristol depôt should be extended to within a reasonable distance of the suburban stations of Bristol.	The Company stated that the area in question extends about one mile from the station and that it was not reasonable to expect the Company to cart traffic from and to all places within the parliamentary boundary of Bristol, in some cases three or four miles distant. The complainants urged that delivery should be made from the suburban stations round which there was in each case a large population, or that there should be free delivery from Bristol. In reply the Company contended that the suburban stations had not the warehouse and other accommodation necessary for this purpose, that to do what the complainants asked would add materially to the cost of conducting the Company's business, and that a large proportion of the rates are on such a low basis as to prohibit the Company from undertaking additional services for the money received. The complainants were not satisfied with the Company's reply, and the Board of Trade then offered to arrange a conference. No reply has been received at present.
20	Feb. 27	The Bear Creek Oil Shipping Co., Limited, Cardiff.	Great Western	That lower rates are charged for the conveyance of petroleum to stations in the South Wales district from Bristol than from Cardiff, although the distances from the latter are less than from Bristol, thus placing complainants at a disadvantage as compared with their Bristol competitors.	The railway company explained that the complaint was due to class rates having been charged from Cardiff, the Company not having had time to arrange exceptional rates, but they had now decided to revert to the old exceptional rates, and to adopt in some cases rates lower than the old rates. A copy of this explanation was sent to the complainants who wrote thanking the Board of Trade and stating that the rates complained of had been revised and rectified by the Company.
21	Feb. 28	North of England Pure Oil Cake Co., South Stockton.	North Eastern	That while the rates for the conveyance of oil-cake from Hull and Stockton to various places are on the same basis, the Hull traders have their goods carted to the station and loaded into the trucks free of charge while the Stockton traders are charged 1*s.* per ton for these services.	In the correspondence which ensued, the Company stated that they could not understand the complaint, as heretofore it had been alleged that the Stockton traders had been unduly favoured over the Hull traders. The Hull rates included collection while the Stockton rates did not. A copy of the Company's replies was sent to the complainants, but no further communication was received.
22	Mar. 8	Hall & Co., Croydon.	Midland, and London Brighton and South Coast.	That complainants are charged the same rate for coal conveyed from collieries on the Midland Railway to their private sidings at Croydon, the marshalling and shunting being done by themselves, as is charged to traders using the London, Brighton, and South Coast Company's goods yard, where the marshalling and shunting are done by the Company. That the railway companies refuse to allow a rebate on the ground that the rate does not include a terminal charge and is greatly below the maximum they are authorised to charge for conveyance.	The London Brighton and South Coast Company stated— (1.) That the complainants' sidings are on the opposite side of the main line to the Company's goods yard at Croydon, and access to them can only be obtained over sidings belonging to the Company at a point where the working is extremely inconvenient owing to the proximity of passenger platforms. (2.) That the service rendered by the Company in detaching complainants' trucks from the train and conveying them into the private sidings is more than equivalent to the 3*d.* per ton for station terminal, as the traffic could be more conveniently dealt with in the Company's goods yard. (3.) That under the judgment in the case of Hall *v.* London, Brighton, and South Coast Railway Company they are entitled to make a separate and additional charge for the conveyance of waggons from the goods yard to the complainants' premises. (4.) And that the rate does not include a station terminal as it is considerably below the maximum charge for conveyance. The Midland Railway Company stated that the question was one for the London, Brighton, and South Coast Railway Company to deal with. The complainants in reply contended that the service rendered by the Company and claimed by them as equivalent to the terminal, is included in and therefore covered by the conveyance rate, and that, moreover, it is performed by the Company for their own convenience and might be entirely obviated by marshalling the trucks at Norwood Junction.

Reference Number	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
					The London, Brighton, and South Coast Railway Company then stated that they attached great importance to the principles involved, and were prepared, if necessary, to defend their position before the Railway Commissioners. A copy of this reply was sent to the complainants.
23	1893. Mar. 17	H. Tate and Sons, London.	London and South-Western.	That in carrying on business as refiners of sugar at London, Southampton, and Poole the complainants are prejudiced by the preference given to sugar traffic conveyed from Paris to stations viâ Honfleur and Southampton, a rate of 25*s.* 10*d.* being charged from Paris to nearly all London and South-Western stations irrespective of the distance of the latter from Southampton, whereas the local rates charged to complainants vary according to the distance.	After some correspondence a meeting was held at the Board of Trade to discuss the complaint. The Company contended that the rates for foreign sugar were governed to a large extent by direct competition from France to Bristol and the Thames, but they admitted that the grouping of the stations on their system to which one uniform rate was charged was too large, and on this point they were anxious to meet the complainants so far as they possibly could. After further discussion it was suggested on behalf of the Board of Trade that the Company should reconsider the grouping (which they promised to do) and communicate the result to the Board of Trade and the complainants, and that if any necessity arose another meeting could be held at the Board of Trade to discuss the subject. The complainants subsequently stated that a satisfactory settlement had been arrived at, the Company having agreed to divide their stations into five groups, with rates varying from 25*s.* 10*d.* to 35*s.* per ton, in substitution for the uniform rate of 25*s.* 10*d.*
24	Mar. 20	R. Ellis and Sons, Ruthin.	London and North-Western.	That complainants are charged unfair and unreasonable rates for the conveyance of mineral waters from Ruthin to various parts of the country in consequence of their mineral waters, which are packed in wickerwork receptacles, being charged under Class 2 as "Mineral waters, e.o.h.p." instead of under Class 1 as "Mineral waters in casks and cases."	The Company replied that their Railway Rates and Charges Act, 1891, had made no difference in the classification of complainant's mineral waters, as in the old classification they were under Class 2 as "Mineral waters in hampers," and were carried at exceptional rates generally exceeding those applicable to Class 1; and it was only since January last that the firm had claimed that the receptacles in which their mineral waters were conveyed should be treated as "cases." The Company, however, had submitted for the acceptance of the complainants' exceptional rates for many places, and they were willing to arrange rates for such other places as may be desired. A copy of the Company's reply was sent to the complainants, from whom no further communication was received.
25	Mar. 21	McArthur, Scott, & Co., Glasgow (per Mansion House Association on Railway and Canal Traffic).	Caledonian, City of Glasgow Union, North British, Great Northern, Lancashire and Yorkshire, London and North-Western, Midland, and North-Eastern.	(1.) That some of the through rates charged to complainants between the places mentioned in their complaint are unfair and unreasonable; and (2.) That they are unduly prejudiced by the conditions attached to the rates charged to them from Glasgow to places in Lancashire, as compared with the conditions applicable to the rates charged to Dyewood liquor manufacturers in Lancashire who compete with them in Scotland.	The complaint was considered at a meeting of railway managers at the Railway Clearing House, and the complainants were informed of the reduced rates which the Companies had agreed to adopt. No further communication was received from the complainants on the subject.
26	Mar. 23	J. G. Marsh, Cardiff.	Great Western	(1.) That butter carried from Cardiff to Porthcawl, a distance of 30 miles, is charged at the rate of 11*s.* 4*d.* per ton, whereas, from Bristol to Porthcawl, a distance of 70 miles, the rate is only 15*s.* per ton. (2.) That the rate for the conveyance of cheese, bacon, and butter from Cardiff to Penygraig, a distance of 18 miles is the same as from Bristol to Penygraig, a distance of 58 miles, viz., 12*s.* 3*d.* per ton; and that 10*d.* per ton per week is	(1.) In the correspondence which ensued, the Company explained that the rates from Bristol to Cardiff and Porthcawl were on a low basis to avoid sea competition, that these rates were much valued by traders in Cardiff and Bristol, and that to raise the rate from Bristol to Porthcawl would not benefit traders in Cardiff, but would result in the traffic being sent by sea. The complainant denied that the rate from Bristol to Cardiff was exceptionally low, and suggested that the Company should reduce it. The Company replied that the rate was an exceedingly low one, and they could not further reduce it, and they were compelled to submit to seeing a portion of the traffic carried by water. (2.) The Company explained that the rate of 12*s.* 3*d.* from Cardiff, including collection and delivery, is the ordinary class rate on consign-

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
				charged by the Company for storage at Bristol, while only 2*d.* per ton per week is charged by private warehousemen.	ments of less than 5 cwts., and that there are lower rates of 10*s.* 6*d.*, including collection and delivery, and 7*s.*, exclusive of collection and delivery, on consignments of 5 cwts. and upwards, while the rate from Bristol of 12*s.* 3*d.* was an exceptional rate, at owner's risk, on consignments of less than 10 cwts., or 11*s.* 8*d.* on consignments of 10 cwts. and upwards. The rates from Bristol to seaport towns and towns at short distances from the coast were necessarily fixed on a low basis to meet competition; but to meet the complaint to some extent, the Company would reduce the rate of 12*s.* 3*d.* from Cardiff to 10*s.* 6*d.* As regards storage, the Company do not profess to compete with private warehousemen, as they only provide the accommodation to meet the temporary requirements of traders, and a week's storage is allowed free. A copy of the Company's replies was sent to the complainant.
27	1893. Mar. 23	A. and A. Peate, Macsbury Hall Mills, near Oswestry.	Shropshire Union Railways and Canal.	That the complainants are charged 9*s.* 3*d.* per ton for the conveyance of grain along the Shropshire Union Canal from Liverpool to Maesbury, exclusive of unloading and warehousing, while for the same rate the Company unload grain from the boats into their warehouses at Maesbury and cart it to their warehouse at Oswestry, a distance of three miles. The complainants considered they were entitled to a rebate, and also a rebate for loading and unloading in the case of local traffic.	From the correspondence which ensued it appeared that the rate of 9*s.* 3*d.* had been reduced to 9*s.* 2*d.*, the reduction having been made, according to the Company, prior to the date of the complaint, but according to the complainants, as a result of the complaint. The Company stated that the rate to Oswestry, including unloading at Maesbury and cartage to Oswestry, was 9*s.* 3*d.* and that this rate was due to competition with the Cambrian and Great Western Railway Companies, otherwise the traffic would be lost, but the amount of traffic was small and in no way prejudiced the complainants. With regard to loading it appeared that the complainants' servants placed the sacks by the side of the boat for the purpose of loading, from whence the sacks are put into the boat by the Company's boatmen, and with regard to unloading the Company's servants placed the sacks on to the wharf from whence they are hoisted by the complainants' servants into the mill. The complainants stated that the unloading on to the wharf was performed by the Company for their own convenience, to enable them to discharge the boats speedily, but if necessary they were ready to do all the work of loading and unloading, including the covering and uncovering of the boats. With regard to warehousing, the Company declined to admit the contention of the complainants that they would have to build a new warehouse if they had to warehouse complainants' traffic. After the Company had replied to the various points raised by the complainants the correspondence ceased.
28	Mar. 23	Watson, Todd, & Co., Birmingham.	Great Western, London and North-Western, and Midland.	That the respective Companies named refuse to grant the through rate proposed by the complainants for the conveyance of grain between the following points of 6*s.* 10*d.* per ton in lots of 4 tons, such rate including the charges for station terminals and the charges for all services incidental to the collection, loading, covering, conveyance, uncovering, unloading, delivery, warehousing, and redelivery, and that if any of the services are not required by the complainants they should be allowed such rebate as is provided by the regulations of the Railway Clearing House: (*a.*) Saltport (Manchester Ship Canal) to complainants grain-mill in Birmingham viâ the railway of the Manchester Ship Canal Company and the London and North-Western Railway.	All three Companies objected to the proposed through rate, principally on the following grounds: The London and North-Western Railway Company: that though 6*s.* 10*d.* might be a suitable rate when the traffic is carried over one Company's railway, it is not so when it is carried over two or three different railways, and that as regards the proposed rate from Saltport it would be altogether disproportionate with other rates for the same description of traffic at present in operation between the same districts. The Midland Railway Company: that they have a rate of 6*s.* 10*d.* on their own railway from Sharpness to Birmingham, and that they are competitors for the traffic with the London and North-Western and Great Western Railway Companies. The Company mentioned that the authorised maximum charge is 12*s.* 2*d.*, including terminals, the distance being 71½ miles. The Great Western Railway Company: that as regards the proposed rate from Sharpness the existing rate by their route had already been the subject of an unsuccessful attack in an application to the Railway Commissioners at the instance of the Liverpool Corn Trade Association, that the rate was barely remunerative, and if altered must be appreciably increased, and that the Company could not afford to deal with the traffic in the manner proposed. As regards the rate from Saltport the route proposed was impracticable.

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
				(*b.*) Ditto, ditto; viâ the railway of the Manchester Ship Canal Company and the Great Western and London and North-Western Railways. (*c.*) Sharpness New Docks to the complainants' grain-mill in Birmingham viâ the railway of the Dock Company and the Midland and London and North-Western Railways. (*d.*) Ditto, ditto; viâ the railway of the Dock Company and the Midland, Great Western, and London and North Western Railways. The complainants stated that the only services required from the railway companies objecting to the through rate in each case is the service of conveyance, and that the proposed rate is the rate at present in operation from Sharpness Docks to Birmingham, including the accommodation and services above referred to.	All the Companies regarded the claim for rebate as inadmissible. Further correspondence ensued, which resulted in a conference being held at the Board of Trade, after hearing the arguments on both sides the complainants were informed that the issues involved were far too large for settlement under section 31, and that the complaint was therefore one that should be submitted to the Railway and Canal Commission.
29	1893. Mar. 23	J. Barringer & Sons, Hackney Wick.	Midland and other Companies.	That petroleum oil carried in owner's tank waggons is placed by the railway companies in Class C., whereas when carried in barrels it is placed in Class 2, and that in consequence the trade of the English dealers who send their oil in barrels is being taken away by an American company whose oil is carried in tank waggons.	The Midland Company stated that no alteration had been made in the classification of petroleum oil by the revision; that barrel traffic is usually carried in small consignments at Company's risk; that it is frequently handled; that it cannot be carried in the waggons with other goods thus causing light loads; and that the Company provide the waggons, cartage at both ends, and perform generally every service in connection with the transit. In the case of traffic carried in owner's tank waggons no like provision or service is called for, and the loads are restricted to 8 tons. The company had provided exceptional rates for the barrel traffic wherever requisite. The complainants replied that the provision of exceptional rates was a totally inadequate way of meeting their complaint; that though 8 tons could not be loaded in a truck it was not fair to say that the traffic usually passes in small consignments; that the small number of claims proves that the risks of carrying it is slight; that the empty barrels are charged for on the return journey, whereas the tank waggons are conveyed free each way; that special accommodation is given to the tank waggons at the stations; and that the barrel traffic is often loaded into the trucks by the traders own men. What they required was a fair classification and a chance of competing on fair terms with the American firm. In reply the Midland Company stated that after again considering the matter the railway companies collectively had decided that as the classification of petroleum oil is the same as last year no alteration can be made, but that they would be willing to consider any specific application for exceptional rates for petroleum oil in casks when sent in full truck loads. A conference was held at the Board of Trade with regard to this and the similar complaint of the Scottish Mineral Oil Association (*see* case 57, p. 30). The complaint is still under consideration.
30	Mar. 24	W. Bendall, Taibach, South Wales.	Great Western	(1.) That the same rate of 10*s.* per ton is charged for the conveyance of petroleum to Port Talbot from Cardiff as from Bristol, which is double the distance. (2.) That the rates for returned petroleum barrels are excessive and anomalous, the rate from	(1.) The Company maintained that the Cardiff rate, which includes collection and delivery is a low one, and is a reduction on the rate in force last year which, although the same in amount, was governed by a minimum charge as for 5 cwt., a condition which does not now apply. They admitted that the rate from Bristol is the same as from Cardiff, but contended that the effect of raising it would be to cause the traffic to be carried by water from port to port without any advantage accruing to the public.

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				Port Talbot to Cardiff being 11*s.* 8*d.*, and to Bristol 18*s.* 9*d.*	(2.) The Company stated that the rates now in force for returned empties were not as quoted by complainant as they had recently been considerably reduced. A copy of the Company's reply was sent to the complainant, from whom no further communication was received.
31	1893. Mar. 27	Woolston and Bull, Wellingboro' (per Mansion House Association on Railway and Canal Traffic).	Midland - -	Complainants are maltsters and corn merchants, and their siding is situated close to the goods yard of the Midland Company's station at Wellingboro'. They complained that they are charged the full station to station rates although they provide their own station accommodation and perform all the terminal services, except the tying on of the sheets, which is done by the Company's servants. They also complained that according to an analysis furnished by the Company of a siding to siding rate they are charged 1*s.* per ton at each end for special services rendered at the sidings. This charge they consider unfair and unreasonable as it amounts to 1*s.* for shunting each truck a few yards from the private siding to the Company's siding, a service which is really incidental to conveyance, and should be included in the conveyance rate, and, moreover, the charge is equal in amount to the maximum station terminal chargeable on Class C. traffic.	The Company stated that the siding at Wellingboro, which complainants claim as their own, is constructed on the Company's land, and was paid for partly by the Company and partly by the complainants, and that the latter have the right to use it under an agreement which is terminable at short notice. They are making careful inquiry into the subject of the complaint, and will reply further. In a further communication, a copy of which was sent to the complainants, the Company stated that the case bore some analogy to the cases of Messrs. Pidcock & Co. and Mr. Wheeldon (*see* page 10), and suggested that the case should be treated in the light of the decision arrived at in those cases.
32	Mar. 28	W. Rutherford, Hawick (per Mr. W. Field, M.P.).	North British -	That complainant sends 60,000 dead sheep every year from Hawick to London, for the conveyance of which he is charged 70*s.* per ton, amounting to over 12,000*l.*, while traders in Berwick, who do not send half the number of carcases to London, are charged only 60*s.* per ton by another company, the mileage being the same in both cases. He claims that he should be charged at least the same rate as the Berwick traders, who buy their sheep in the same district, and compete with him in the London market.	The Company stated that in concert with the other railway companies the various towns are grouped with the result that Hawick is in a different group to Berwick, which is on another company's route, that an alteration could not be made without affecting the rates charged by other companies, and that there was no reasonable ground for complaint. The complainant was not satisfied with the Company's reply, and the Board of Trade have offered to arrange a conference.
33	Mar. 29	T. & J. Bernard, Edinburgh Brewery, Edinburgh.	North British -	(1.) That complainants have a siding of their own, and load and unload their waggons, but, nevertheless, are charged the same rates as traders who use the Company's station accommodation, and for whom the Company perform the services of loading and unloading; and that they are not allowed a rebate, although the rates exceed the maximum rates for conveyance. (2.) That they are charged a rate of 10*s.* 5*d.* for the conveyance of ale from Edinburgh to Glasgow, although the maxi-	(1.) The Company stated that the siding at Edinburgh does not belong to complainants although it is upon their land, having been laid down at the expense of the Company, who maintain and work it. This statement was not disputed by complainants, but they remarked that the Company agreed to construct and work the siding as a consideration for obtaining the traffic; the loading platforms, however, were erected by the firm and are maintained by them. The Company further stated that under an agreement with complainants which had been in force for nearly 8 years, they made an allowance of 1*s.* 5*d.* for cartage at Edinburgh, and 3*d.* per ton for loading and unloading. The complainants, however, denied that any allowance is made for loading and unloading, and contended that the whole of the 1*s.* 8*d.* is for cartage. (2.) The Company explained that complainants'

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
				mum rate for conveyance is only 5*s.* 3*d.*, and although they perform the carting and the loading and unloading themselves and do not use the station accommodation at either end.	traffic sent to Glasgow is dealt with at their Stobcross station in that town, from whence it is carted direct to the ships, or taken by special engine over the dock rails to a point nearer the quay, and thence carted by the Company to the ships' side. In the latter case a tonnage toll is charged the Company by the Clyde Trustees, but this is not charged against the sender. The usual Glasgow cartage allowance is made when the cartage is not done by the Company. The complainants denied that their traffic is unloaded by the Company at Stobcross station and carted by them to the ship's side, the fact being that the waggons are run into the docks to a point as near the ship as possible, where the goods are unloaded and carted by complainants' men. The Board of Trade have recently offered to arrange a conference.
34	1893. Mar. 29	G. W. Biggs, (per the Cork Incorporated Chamber of Commerce).	Cork, Bandon, and South Coast.	That, for the conveyance of mill stuffs, the rate from Bantry to Skibbereen and from Bantry to Dunmanway, a distance of 20 miles in each case, is 5*s.*; whereas, between Bantry and Cork, a distance of 58 miles, the rate is only 2*s.*	The Company contended that 5*s.* is a reasonable rate for the distance, and is considerably below the authorised maximum rate, and that the same rate is charged for similar distances on other parts of the line between stations where the traffic is infinitely greater than between the stations named, and no complaint whatever has been made by any of the traders. They also stated that the rate to Cork is really 3*s.* 6*d.* per ton, but a rate of 12*s.* per waggon is charged for a load not exceeding 6 tons, and that this low rate is rendered necessary by the competition of the Clyde Shipping Company, who carry between the same points at 2*s.* per ton, and whose agent in Bantry is the complainant. A copy of this reply was sent to the Chamber of Commerce, but no further communication was received.
35	Mar. 29	J. McCombie & Co., Glasgow.	Caledonian and North British.	That these Companies refuse to receive fish arriving from Shetland by steamer at Aberdeen after 6 p.m., that being the hour at which the goods yard is closed, although the fish train for Glasgow does not leave Aberdeen until 11 p.m.	The Companies explained that the goods yard at Aberdeen is closed at 6 p.m. in consequence of complaints from their servants as to the long hours of duty, and in order to prevent delay in the despatch of trains and the delivery of traffic. The fish traffic from Shetland is intermittent in its character, and it would therefore be impracticable to keep the yard open on account of it; and, moreover, on arrival at Aberdeen, the fish is frequently sold there, or is re-consigned by steamer to Leith, and it is equally impracticable, in most cases, to send the Shetland fish by the 10.45 p.m. train, which is run for the special accommodation of fish consigned to the Glasgow, Edinburgh, and Leith markets from stations on the Great North of Scotland Railway. The Caledonian Company also stated that they had been able to make arrangements at Glasgow to receive fish direct from steamers after the reguiar closing hours, but the circumstances there were different to Aberdeen. The complainants replied that they were obliged to sell in Aberdeen or send further on by steamer, owing to the fact that the railway companies refuse to accept the traffic when the steamer arrives, otherwise the bulk would be railed to Glasgow. It would be easy and practicable to receive the traffic up to 9 p.m., as at Glasgow. A meeting between the parties was arranged to take place at the Board of Trade, but, at the request of the complainants, it has been postponed.
36	Apr. 1	W. H. Fryer, Sling Iron Mines, near Coleford.	Severn and Wye and Severn Bridge.	Complainant is the owner of a private siding at Sling, near Coleford, which was constructed by him at considerable expense for the use of the Old Sling Pit iron mines. Close to his siding is another belonging to the Railway Company, which is used by competing freighters of iron ore. He complained that he is charged the same rate for the carriage of iron ore to South Staffordshire as traders who use the	The Company replied that very low uniform group rates are in force for the conveyance of iron ore from all the sources of traffic on their system to the stations of the London and North-Western, Midland, and Great Western Railway stations in South Staffordshire, these rates being far below the powers of the railway companies under their recent Acts. As regards the siding stated to belong to theCompany,although it was laid upon their land the cost of the loading banks was paid for by the traders who use it; that a discrimination could not be made in favour of the complainant without being made to others more favourably situated; and that the services rendered by the Company at the sidings in question are practically equal. But the Company added that even if it could be shown that equal services were not rendered, the

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
				Company's siding, and that the Company refuse to allow him a rebate on the ground that the rate is below the maximum rate for conveyance.	difference in relative cost would probably not amount to more than ½*d.* per ton, which was not worth consideration as against the importance of maintaining the present grouping system. In reply, the complainant contended that the allowance of a rebate for station terminal would not militate against the grouping system; that the grouping was not uniform; that he had given the Company notice that he did not require them to render any of the services mentioned in section 5 of the Schedule in their Rates Act, and that they did not render any of these services; and that his claim was in respect of station terminal, which is distinct from the question of service terminals. The Company then stated that the complaint appeared to be founded on the supposition that the present low group rates would be continued if the Company were bound to make an allowance to siding owners; but this was a misapprehension, as in such circumstances the whole of the rates would be re-considered, and, if the complainant was entitled to any allowance, which the Company did not admit, it would be measured, not on the cost of his private siding, but on the difference of cost (if any) to the Company in performing services rendered to him as compared with those rendered to traders using the adjoining siding. A copy of the decision of the Railway Companies in the similar complaints of Messrs. Pidcock & Co. and Mr. Wheeldon (*see* page 10) was sent to the complainants.
37	1893. April 4	G. Rushworth, Colne.	Lancashire and Yorkshire.	That the rates charged for the conveyance of second-hand and new machinery have been increased as compared with the rates formerly in force and are unreasonable.	After considerable correspondence had taken place, and after the failure of an interview between the complainant and the Goods Manager of the Company to bring about a settlement of the dispute, a meeting was held at the Board of Trade between the parties. The complainant brought forward three instances of the rates of which he complained; (1) a rate of 15*s.* for second-hand looms from Burnley to Manchester; (2) a rate of 19*s.* 2*d.* for second-hand looms from Heywood to Colne, and (3) a rate of 44*s.* 7*d.* for cranes from Colne to London, and alleged that the Company charge separately, and a higher rate, for boilers sent with and belonging to the cranes. The Board of Trade intimated (1) that the rate of 15*s.* seemed too high, and that some reduction should be made; (2) that the rate of 19*s.* 2*d.* seemed to be exorbitant, and that the Company should inquire into it, and (3) that with regard to the rate to London, which the Company stated had been reduced, though they could not then say to what extent, the Company should consider whether they could not quote a rate for cranes including boilers which the complainant stated formed part of the cranes. The Company subsequently wrote with regard to (1) that under the circumstances they would reduce the 15*s.* rate to 14*s.* 7*d.*; (2) that the rate of 19*s.* 2*d.* was charged by error of the shipping clerk instead of 16*s.* 3*d.*, which was the correct rate, and that the mistake had now been put right, and (3) that the Companies interested had been consulted and did not see their way to charge the same rate for boilers as for crane work, which are in different classes of the classification. The complainant in reply expressed dissatisfaction with the decision of the Company, and his letter is under consideration.
38	Apr. 11	Mr. R. Mallock, M.P., on behalf of the Brixham Fishermen.	Great Western	That the rates for the conveyance of fish to various places have been increased, and that although Plymouth is 24 miles further from London than Brixham, the rate from Plymouth for the conveyance of herrings and sprats is only 40*s.*, while from Brixham it is 45*s.*, and for other common fish from Plymouth 50*s.*, as against 55*s.* from Brixham.	The Company replied that having considered the complaint they had arranged to charge the same rates from Brixham as from Plymouth, viz., 40*s.* per ton for herrings and sprats, and 46*s.* 8*d.* for common fish; that the rates on mackerel and whiting to Birmingham and Manchester show a reduction of 10*s.* per ton on the rates of 1892; and that with regard to other rates the Company are in communication with the other Companies concerned, and hope to be able to induce them to continue the old rates. In a further communication the Company stated that the old rates on various kinds of fish to Birmingham, Manchester, and Northern towns had been reinstated on June 1st. A copy of these replies was sent to Mr. Mallock, M.P.

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
39	1893. Apr. 17	J. & J. Garroway, Netherfield Chemical Works, Glasgow (per Mansion House Association on Railway and Canal Traffic).	North British	Messrs. J. & J. Garroway again complained (*see* No. 52 in previous report) that they are charged higher rates upon their traffic than are charged to other traders for the same description of traffic. The complainants asked the Board of Trade to consider their complaint as it related to charges in 1892, while the litigation referred to in the previous complaint, which was still pending, related to charges between 1885 and 1890.	A meeting was arranged between the parties at the Board of Trade. During the discussion it was admitted that the same question was involved in the present complaint as in the litigation which was pending, viz., the construction to be placed upon the agreement between the Company and the complainants. The Board of Trade therefore stated that they could not venture to decide the question of the construction to be placed on the agreement; that it must be left to the court; but that whatever the decision might be it would practically settle the complaint. The complainants also complained that the Company had stopped their credit account, and as their traffic was considerable the prepayment from day to day was a source of great inconvenience. The Company replied to this that the amount owing to them two years ago was considerable compared with the amount involved in the litigation. The Board of Trade suggested that it was hardly necessary to stop the credit account, but on the other hand the complainants should be willing to make periodical settlements. At the request of the complainants the case was adjourned, with liberty to them to apply again if necessary. The Board of Trade subsequently understood that the litigation had terminated in the complainants' favour.
40	April 17	F. J. Butterworth, fruit preserver, Newcastle, Staff.	North Staffordshire.	That for the conveyance of jam in pots, packed in cases or casks, the Company have increased the rates as follows:—Newcastle to Burton, 32 miles, from 13*s.* 4*d.* to 14*s.* 9*d.* per ton, and Newcastle to Derby, 38 miles, from 15*s.* to 16*s.* per ton, while other companies have gone back to the old rates, thus placing complainant at a disadvantage with his competitors; and further, that the rates are excessive, especially when compared with the following rates from Newcastle over two companies' lines for consignments of 3 cwts. and upwards at Company's risk, viz.:—Liverpool, 59 miles, 15*s.* 9*d.* per ton, Birmingham, 46 miles, 15*s.* 9*d.* per ton, and Manchester 39 miles, 13*s.* 1*d.* per ton.	The Company maintained that the rates were reasonable, considering the risk of breakage but they offered to reduce the Burton rate to 11*s.* 8*d.*, and the Derby rate to 12*s.* 6*d.*, if the complainant took the risk. This offer the complainant refused to accept, on the ground that the reduction was not sufficient to cover the risk, and that the Company required a minimum consignment of one ton. In a further communication the Company stated that the complainant's principal competitor in Derby is a Liverpool firm, who complain that they are severely handicapped in the competition in consequence of their rate being about 8*s.* per ton higher than that charged the complainant, and that the Company therefore could not give complainant a special rate without prejudicing this firm, especially as he will not relieve them of risk or guarantee a minimum weight per consignment. The complainant replied that the firm referred to are not his principal competitors, as he had to contend with competitors in Derby, Birmingham, and other places, who have an advantage over him in Derby and Burton; and considering the amount of his traffic during the past eight months, and that the only claim during that period was 7*s.* 6*d.* for broken empty cases, the Company should meet him with a rate of 10*s.* 6*d.* to Burton and of 12*s.* 6d. to Derby at Company's risk, as, unless the rates were reduced, he would be compelled to cease working the district. In reply, the Company maintained that, having regard to complainant's statements as to the amount of traffic and the small risk, the rates offered by them involved a substantial concession beyond which they could not legally go without prejudicing other traders. They pointed out that the rates would apply equally from Derby to the Pottery stations, and if put too low, might result in letting the complainant's competitors into his own home market. A copy of this reply was sent to the complainant, from whom no further communication was received.
41	April 19	North - Eastern Paper-mills Co., Limited, Newcastle - upon - Tyne.	Lancashire and Yorkshire and North-Eastern.	That complainants have been charged an excessive rate for the conveyance at owner's risk in full truck loads of a second-hand paper-making machine, weighing 150 tons, from Feniscowles, on the Lancashire and Yorkshire Railway, to South Shields, on the North-	In the correspondence which ensued, the Lancashire and Yorkshire Company denied that they were asked to quote a rate, the complainants merely asking them to receive and despatch the machinery as cheaply as possible compatible with safety, and as nothing was said about owner's risk, it was carried at Company's risk in the ordinary way. At the time of the application, 13th January 1893, no rates were in force between the two points, owing to the revision being still in hand.

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
				Eastern Railway, a distance of 145 miles. That they could not obtain a quotation of a rate from the railway companies prior to sending the machinery, but that after its conveyance payment was demanded at the rate of 46*s.* 8*d.* per ton, which they declined to pay, when the rate was reduced to 33*s.* 4*d.* per ton; that the rate so charged is excessive, and that, in their opinion, the rate to be reasonable, should not exceed 18*s.* per ton.	but when this was completed the new rate of 46*s.* 8*d.* for Class 4 was charged, the old rate of 52*s.* 6*d.* for this class having been cancelled; and subsequently, on the Paper Mills Company complaining that the rate was excessive, the railway companies agreed to substitute for it a special rate of 33*s.* 4*d.*, which they considered fair and reasonable. A rate of 18*s.* would certainly not be remunerative. The North-Eastern Company stated that the real contention of the complainants is that the machinery should be charged merely as old iron, which is most unreasonable, as the machinery was re-erected in a paper-mill at South Shields, and the fact of its being second-hand did not affect the cost of its conveyance. The Company also stated, that during the recent revision the rate for paper-making machinery had been reduced to 38*s.* 4*d.* at Company's risk, and to 32*s.* 6*d.* at owner's risk. After further correspondence the Board of Trade arranged a conference, but before the date of the meeting the complainant stated that a settlement with the Company was probable and that they did not consider it necessary to trouble the Board of Trade any further.
	1893.				
42	Apr. 22	The Birmingham Fish, Game, and Poultry Dealers Association.	London and North-Western and Great Western.	That a rate of 42*s.* 6*d.* is charged for the conveyance of mackerel from New Milford to Birmingham, a distance of 204 miles, while from the same place to Liverpool, a distance of 219 miles, the rate is only 30*s.* The complainants asked the Board of Trade whether this was not a flagrant breach of section 27 of the Railway and Canal Traffic Act, 1888.	Both Companies stated that competition exists by sea between the Irish fishing grounds and the ports of Holyhead, Fleetwood, and Liverpool, and that an exceptionally low rate is charged from New Milford to Liverpool to enable fish buyers at Milford to send to the Liverpool market, and to secure to the railways a share of the traffic. The circumstances of Birmingham are altogether different, no similar competition existing between New Milford and Birmingham; and the rate of 42*s.* 6*d.*, which has been in force for many years, is considered by the Companies as perfectly reasonable in itself having regard to the services rendered. In sending a copy of the Companies replies to the complainants the Board of Trade informed them that the question whether there is or is not an undue preference is one for the Railway and Canal Commissioners, and not for the Board of Trade, to determine; that in small cases of no far reaching effect the Board of Trade had endeavoured to settle such complaints amicably, but that in a case of such importance as theirs the Board of Trade did not consider they could adopt that course.
43	Apr. 27	J. G. Marsh, Cardiff.	Taff Vale	That the rate for the conveyance of cheese and butter from Cardiff to Ystrad, a distance of 21 miles, had been increased from 10*s.* to 12*s.* 4*d.*, whereas from Bristol to Ystrad, a distance of 61 miles, the revised rate is only 10*s.* 10*d.*, of which 5*s.* is paid for the water carriage from Bristol to Cardiff, leaving 5*s.* 10*d.* only for the conveyance by railway from Cardiff to Ystrad, thus placing the Cardiff traders at a disadvantage.	The Company explained that the old Bristol rate was an exceptionally low one, and, therefore, in the recent revision it was raised to 13*s.* 8*d.*, while the Cardiff rate was fixed at 10*s.* 6*d.*; that the water-carriers receive 4*s.* 8*d.* of the Bristol rate, out of which they pay the cost of carting from the waterside to the railway station at Cardiff, leaving the Company the sum of 9*s.*; and that the rate of 10*s.* 6*d* for the Cardiff traffic includes collection and delivery, which the 9*s.* does not, so that the cost to the Cardiff merchant for the conveyance of his goods from Cardiff to Ystrad is really less than to the Bristol merchant. The Company added that the distance of 61 miles quoted by the complainant is not the distance by the water route from Bristol to Ystrad viâ Cardiff, but is the distance by railway for which a rate of 21*s.* is charged. The complainant contended that the same rate per mile should be charged from Cardiff as from Bristol. The Board of Trade, however, informed him that they were not disposed to take any further action in the matter, having regard to the fact that the principle of equal mileage rates for which he contended had not been approved by Parliament.
44	Apr. 29	J. Thomson, provision merchant, Kilmarnock.	Glasgow and South-Western.	That higher rates are charged for the conveyance of butter and eggs from Newcastle to Kilmarnock than from Newcastle to Glasgow viâ Kilmarnock, some 35 miles further, the	The Company explained that lower rates are charged from Newcastle to Glasgow on account of the large amount of traffic, and in consequence of water competition, considerations which do not apply to Kilmarnock, and that, although the traffic passes Kilmarnock, the rates are calculated on the distance by the shortest route.

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint	Action.
				rates from Newcastle being 23*s.* 4*d.* for eggs and 25*s.* for butter, as compared with 20*s.* and 14*s.* 2*d.* respectively to Glasgow.	In reply the complainant questioned the water competition, and contended that Kilmarnock should be placed upon as good if not a more favourable basis than Glasgow, the distance being less. The Board of Trade informed the Company that they were not satisfied that the higher charges for a less distance were fair or reasonable, and asked the Company to further consider the complaint. The Company replied (December 1893) that the complaint had been considered by the railway companies concerned, and that if they were not at liberty to quote the low rates to Glasgow to meet competition without lowering the rates to intermediate stations (which in the case of Kilmarnock were already low), then the rates to Glasgow must be increased, and the Companies were unwilling to make any such increase unless compelled by law to do so. The Board of Trade forwarded a copy of this reply to the complainant and offered to arrange a conference if he considered such a course desirable.
45	1893. Apr. 29	Hughes & Co., Coal Merchants, Northampton.	London and North Western.	The complainants rent a siding and wharf belonging to the Northampton Gas Light Company, and they complain that they are charged the same rate on their coal traffic as is charged to their competitors at the two adjoining stations or depôts, where the Company allow unlimited use of sidings and use of stacking ground, besides performing the service of weighing the coal.	After correspondence a conference took place at the Board of Trade. The Company contended that as the rate is within the Company's maximum powers for conveyance, it does not include a terminal charge, and that the complainants are not, therefore, entitled to a rebate for station terminal, an allowance on private siding traffic only being made when the charge exceeds the maximum rate for conveyance. They further contended that the accommodation and services are provided for all traders alike, and that the arrangements made by the complainants had not been forced on them by the Company. It was pointed out by the Board of Trade that the Company's Act did not entitle them to charge for the mere provision of accommodation but only for its actual use. The charge made to the competitors of complainants included services and the use of accommodation which the complainants did not require, and the Board of Trade, therefore, considered that they were entitled to some reduction, but not necessarily to the extent of the authorised station terminal. The Company promised to consider the question, and it was understood that the opinion of the Board of Trade did not in any way apply to the quantum of the rate. The Company subsequently stated that they did not see their way "to make any allowance out of the station rates where the latter are less than the maximum." A copy of this decision was sent to the complainants. In reply the complainants thanked the Board of Trade for the concession of 2*d.* per ton which had been obtained for them, and which would apply to nearly all their traffic. They further expressed their indebtedness to the conciliation clause for obtaining substantial relief for them without recourse to a long and expensive lawsuit which they had contemplated before being advised to appeal to the Board of Trade.
46	May 4	James and Rosewall, Petroleum Oil Importers, Plymouth, and the Western Counties and General Manure Co., Limited.	Great Western	That the Company are treating complainants in an unreasonable manner in not receiving traffic at the Stonehouse Pool Quays for stations on the Great Western Railway at the same rates as are charged to traders at Cattewater and other parts of the port.	The Company objected to the proposed through rates on the ground that they were insufficient, especially taking into consideration the fact that the traffic would pass over the lines of two companies. The Company subsequently stated that they had agreed with the London and South-Western Railway Company that the through rates from Stonehouse Pool Quay and Cattewater to Great Western local stations should be the same as from Millbay for distances over 40 miles, while for distances of 40 miles and under an addition to the Millbay rates of 4*d.* to 9*d.* per ton would be made. The case is still under consideration with that numbered 60 on page 30.
47	May 5	Drummond and Reid, Edinburgh (on behalf of the Cowdenbeath Coal Co.,	Caledonian and North British.	The complainants are coalmasters owning collieries situated on the North British Railway in the county of	The North British Railway Company in reply denied that the difference is generally about 30 per cent., as while in many cases the allowance is less, in many other cases it is more than the allowance previously made. They had

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
		Limited, and others, Coalmasters in Fifeshire and Clackmannanshire).		Fife, and in the neighbourhood of Alloa, and send large quantities of coal to the Fife ports, and to stations on the Caledonian and North British Railways. They complained that since the revision of rates in January 1893, the allowances made by the North British Company for waggons supplied by the traders are about 30 per cent. less than the allowances previously made; that they are not of reasonable amount, being insufficient to meet the outlay for providing the waggons; and that they are fixed so as to give undue preference to the Company's waggons. They also complained that the Caledonian and North British Companies refuse to quote reasonable through rates for traffic in traders' waggons to stations on the Caledonian Railway north of Perth.	made an offer, which they repeated, to buy the complainants' waggons at a fair price. They did not enter fully into the merits of the question, as they considered it was one which should be dealt with under the Company's Rates Act by arbitration and not under section 31. The rates charged were fair and reasonable, and with regard to through rates, such rates were in existence, and there is no obligation to quote through rates in traders' waggons, the question of what allowance should be made for the provision of waggons being a matter for arbitration as stated above. The Caledonian Railway Company in reply contended that the question of allowance for the provision of private owners' waggons must be dealt with by arbitration under the Company's Act, and could not be dealt with by the Board of Trade under section 31. With regard to through rates section 25 was not applicable, as through rates were in existence, and the question of what reduction should be allowed from these rates for the provision of private owners' waggons must be determined by arbitration. The Company suggested that the Board of Trade should appoint the Railway and Canal Commission as arbitrator. A copy of these replies was sent to the complainants, who subsequently asked the Board of Trade to proceed with their complaint as to waggon allowances. Under the circumstances the Board of Trade appointed the Railway and Canal Commission to act as arbitrator to determine the disputes as to these allowances.
	1893.				
48	May 5	Drummond and Reid, on behalf of the Cowdenbeath Coal Co., Limited, and other Coalmasters in Fifeshire and Clackmannanshire.	North British -	(1.) That the rate for the conveyance of coal in owners' waggons to Burntisland and other Fifeshire ports has been raised from 1*s.* to 1*s.* 1*d.*, and this increase is not compensated for by the reduction in the rate for coal in Company's waggons from 1*s.* 6*d.* to 1*s.* 4*d.* as the Company fail to supply the waggons required, and as the reduction is made after most of the traders have been forced to supply waggons. (2.) That undue preference is given to owners of collieries in the counties of Lanark, Mid and East Lothian, Stirling, and Linlithgow, who compete with complainants in the same markets, and whose coal is carried for much longer distances at only a slightly higher rate, the additional charge being far below the cost of carrying for the excess distance.	The Company in reply to (1) contended that the revised rates were reasonable, the rate of 1*s.* 4*d.* being on an average one-third less than the Company's maximum powers for conveyance; that the former difference of 6*d.* between the two rates was a matter of agreement between the parties; and that the Company had made an offer which they repeated to buy the complainants waggons at a fair price. In answer to (2) the Company denied that any undue preference was given, and that the cost of carrying the greater distance exceeds the difference in rate. They contended that the rates charged to the complainants were fair and reasonable and that the complaint was unfounded. A copy of this reply was sent to the complainants, from whom no further communication was received.
49	May 8	The Lords Commissioners of the Admiralty.	London and South-Western.	That the rate for the conveyance of returned empties from Haslar Hospital, Gosport, to London, a distance of 79¼ miles, has been altered from 2*d.* per empty with an additional 3*d.* per ton for delivery, to 21*s.* 8*d.* per ton inclusive of collection and delivery, the effect being to more than double the charge, the increase in one particular case being from 2*l.* 0*s.* 5*d.* to 4*l.* 2*s.* 5*d.*	A conference was held at the Board of Trade. The representative of the Admiralty stated that the returned empties in question consisted of bottles and jars in hampers which were delivered to the Company at Gosport station. The Company had reduced the rate from 21*s.* 8*d.* to 20*s.* per ton, less 1*s.* 8*d.* allowed for collection, but the charges at this reduced rate were still far in excess of the old charges. The Company stated that the rate of 21*s.* 8*d.* had been reduced to 20*s.*, which included 1*s.* 8*d.* for collection and 5*s.* for delivery, leaving a net rate for carriage of 13*s.* 4*d.* which they considered fair and reasonable. They explained that under the old scale, empties travelled up to 125 miles at the same rate, the only distinction being that large empties were charged 4*d.* each and small empties 2*d.* each, station to station, and that the Admiralty empties, being large, should have been charged 4*d.* instead of 2*d.* each. This scale was only applicable to local

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
					traffic, the Railway Clearing House scale being in force for through traffic, and in consequence of two scales being thus in operation anomalies and inequalities resulted in many cases. The Company abolished the old scale because it was found to be illegal under the revised maximum powers for short distances, and because they considered it desirable to adopt the Railway Clearing House scale of charge adopted by the other railway companies, and on the whole the Company found that the revenue from empties was less than last year. The Board of Trade promised to look into the matter, but they doubted if anything could be done if it was the fact that by mistake the Admiralty had only been charged 2*d.* per empty instead of 4*d.* previous to the revision. Subsequently the Board of Trade informed the Admiralty that as the rate charged appeared to be within the authorised maximum rate and is the same as that adopted by most of the railway companies the Board of Trade did not think they could carry the matter any further.
50	1893. May 9	W. H. Ombler, Market Weighton.	North Eastern	That for the conveyance of of petroleum and lubricating oil from Hull to Market Weighton the rate is 7*d.* per cwt., while to Driffield the rate is only 4½*d.* per cwt., the distance being about 19 miles in each case, and in consequence traders at Market Weighton are placed at a disadvantage.	The Company explained that the rate to Driffield is an exceptionally low one in consequence of direct water competition. A copy of the Company's reply was sent to the complainant from whom no further communication was received.
51	May 9	W. Davis and Son, Cardiff.	Great Western	That paints and oils in casks and drums, and common window glass in cases are conveyed from Bristol to Barry at the same rates as from Bristol to Cardiff, although Barry is 12 miles further than Cardiff, and that in consequence the Bristol merchants can undersell the Cardiff merchants at Barry, as the latter in addition to the rate from Bristol to Cardiff, have to pay another rate from Cardiff to Barry.	The Company pointed out that the rates compared were not quite accurate, and stated that the rates from Bristol to places on the Bristol Channel seaboard have of necessity been framed on a low basis on account of the active water competition that exists, and that the complainants would obtain no benefit by the raising of the rates from Bristol to Barry, as any such action would result in the traffic being transferred from the railway to the sea. A copy of the reply was sent to the complainants, from whom no further communication was received.
52	May 10	A. Simpson & Co., Newcastle.	North-Eastern	That the rate for the conveyance of grain from the Tyne Ports to Sheffield has been increased this year from 9*s.* 2*d.* per ton to 11*s.* 8*d.*, whereas the rate from Hull to Sheffield has not been increased.	In the course of correspondence the Company stated that the old rates to Sheffield from the Tyne ports (124 miles), Stockton (94 miles), and Sunderland (123 miles) were 9*s.* 2*d.*, 11*s.* 8*d.*, and 13*s.* 4*d.* respectively, and that in the revision these places had been grouped mainly for public convenience, and an uniform rate of 11*s.* 8*d.* substituted. The old rate from Hull to Sheffield (58 miles) had been allowed to stand, and the Company considered that the old rate from the Tyne ports was one which could not be allowed to remain without running some risk of committing a breach of the law of undue preference. A copy of the correspondence was sent to the complainants.
53	May 12	Joseph Adamson & Co., Hyde.	Manchester, Sheffield, and Lincolnshire.	Complainants own a siding near Hyde Station, and complain that their traffic (boilers) is charged the same rates as traffic to Hyde Station, no allowance being made in respect of services performed by them.	The Company stated that negotiations were taking place between their goods manager and the complainants with a view to an amicable arrangement of the matter, and the complainants subsequently informed the Board of Trade that the dispute had been settled.
54	June 2	J. Robinson, Talysarn.	London and North-Western.	That the Company are charging more than their authorised maximum rates for the conveyance of slates, and at the same time refuse to carry the traffic except at owner's risk, and that the charge for station terminal at	The Company replied that they were in communication with the complainant and the representatives of the other slate quarries in the district upon the subject of the complaint, and hoped to arrive at a satisfactory settlement. A copy of the reply was sent to the complainant, from whom no further communication was received.

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				Talysarn is excessive considering the small cost of the station and the small use made by complainants of the loading platform.	
55	1893. June 7	Drummond and Reid (on behalf of Coalmasters in the Airdrie, Slamannan, and Bathgate coalfields).	North British	The complainants send large quantities of coal to shipping places on the Firth of Forth and to shipping places on the Clyde at Glasgow and elsewhere, and they complained that the allowances made by the Company for waggons supplied by traders are not of reasonable amount and are fixed so as to give undue preference to the Company's waggons.	The Company contended that the differences between the rates for traffic in owners' waggons and in Company's waggons were fair and reasonable, but they did not enter fully into the merits of the question as they considered it was one which should be dealt with under the Company's Rates Act by arbitration and not under section 31. A copy of this reply was sent to the complainants, who subsequently asked the Board of Trade to proceed with their complaint. Under the circumstances the Board of Trade appointed the Railway and Canal Commission to act as arbitrator to determine the dispute.
56	June 7	Drummond and Reid (on behalf of Coalmasters in the Airdrie, Slamannan, and Bathgate coalfields).	North British	That the rates charged for the conveyance of coal constitute an undue preference against the complainants in favour of the collieries in the Hamilton district.	The Company in reply contended that the complainants were in no way unduly prejudiced by the rates charged from the collieries in the Hamilton district, which were regulated for the most part by the rates charged between the same places by the Caledonian Railway Company, who own the shortest route. The Company also contended that the rates charged to the complainants were fair and reasonable. A copy of this reply was sent to the complainants, from whom no further communication was received.
57	June 8	Scottish Mineral Oil Association.	Various railway companies.	That the Scotch producers of paraffin and petroleum oil, which is conveyed in casks, are prejudiced by the unfair advantage which is given to foreign oils which are shipped to the United Kingdom in tank vessels and discharged into storage tanks at the chief ports and then conveyed in owners' tank waggons over the railways at much lower rates than those charged for oil in casks.	A conference upon this complaint and also the similar complaint of Messrs. J. Barringer and Sons (*see* No. 29, p. 21) was held at the Board of Trade. The Great Northern, Great Western, Manchester Sheffield and Lincolnshire, and Midland Railway Companies were represented, and the contentions urged on both sides were similar to those urged against the complaint of Messrs. J. Barringer and Sons. The complaint is still under consideration.
58	June 14	Mr. J. T. Beckett, Manchester.	London and North-Western, Midland, and other Companies.	That the rate of 54*s.* 8*d.* for the conveyance of foreign pine-apples from London to Manchester is unreasonable in itself and unfair as compared with the rates for other kinds of fruit, the rate for apples and pears being only 28*s.* 10*d.*	Copy of the complaint was forwarded to the Railway Companies' Association, who stated in reply that after careful consideration the companies did not see their way to make any further alteration, the rates in question not being more than 5 per cent. over those in operation last year. A copy of the reply was sent to the complainant, from whom no further communication was received.
59	June 21	Berg, Sons, & Co. Billiter St., E.C.	Great Eastern	That the Company do not carry out the decision of the railway companies that all returned empty grain sacks and empty grain sacks sent for filling should be carried free S. to S. between all stations south of Carlisle and Newcastle. The Company provide sacks which they carry free while the sacks of private owners are charged for.	The Company explained that the decision referred to was not adopted by them for their local traffic, and that the former practice of charging on such traffic had been continued. The Companies who adopted the decision reverted to the old practice in 1892. After further correspondence a meeting was held at the Board of Trade at which, in the course of discussion, the complainants mentioned that special arrangements had been made by the Company with one of their competitors. The representatives of the Company agreed to consider whether similar arrangements could not be made with the complainants, with which complainants said they would be satisfied.
60	June 21	Corporations of Plymouth and Devonport, East Stonehouse Local Board, Port of Plymouth Incorporated Chamber of Commerce, Cattewater	Great Western	That through rates should be granted from London and South-Western stations in Plymouth to stations on the Great Western Railway, and that uniform rates should be charged from all parts of the Port of Plymouth, differential rates now	The Company in reply stated that the Directors had decided to grant through rates to all stations, application for such rates not having been made until recently. The rates from Millbay and Sutton Harbour by Great Western Railway would be uniform, though to places west of Plymouth the latter was three miles further than Millbay, while from Cattewater and Stonehouse Pool, over the London and South-Western Railway, the rates for reasonable truck loads would

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
		water Harbour Commissioners, Sutton Harbour Improvement Company, StonehousePool Improvement Company, Plymouth Mercantile Association, and Devonport Mercantile Association.		being charged from the various Great Western and London and South-Western stations. The memorialists stated that they understood that the London and South-Western Railway Company were willing that uniform rates should be charged. Complaint was also made that the Great Western Railway Company give a preference to Bristol over Plymouth in the rates to Exeter.	be the same as from Millbay for distances over 40 miles, but for distances of 40 miles and under, 4*d.* to 9*d.* per ton would be added, the Company having to make a payment out of these rates to the London and South-Western Railway Company. With regard to the complaint of preference given to Bristol, the Company stated that the rates mentioned to Exeter leave the two ports of Bristol and Plymouth in as nearly as possible the same relative position as when the Bristol and Exeter and South Devon were independent railway companies. The Company had maintained that relative position, knowing that a disturbance of it would be very strongly objected to by the Bristol traders, and bearing in mind also that owing to the heavy gradients from Plymouth to Exeter the cost of conveyance is heavier than from Bristol to Exeter. The complainants were not satisfied with the reply of the Company, and at their request a conference has been arranged to take place at the Board of Trade between the various parties in January.
61	1893. June 29	Gerrish & Co., Limited.	Kennet and Avon Canal.	The complainants, who are carriers on the Kennet and Avon Canal, owned by the Great Western Railway Company, complained that the Company charged them tolls on certain articles as in Class 3, whereas on the railway the same articles are carried in a lower class, and further that whereas the Company are only authorised to charge for "Iron of all kinds" in Class 1, they charge Class 3 tolls for many descriptions of iron goods.	In reply the Railway Company admitted that under the existing canal classification some goods were charged in a higher class than they would be under the railway classification, but that in the revised Schedule of Tolls submitted to the Board of Trade under the Railway and Canal Traffic Act, 1888, it is proposed to adopt the railway classification for canal traffic. The Company also contended that the term "Iron of all kinds" did not apply to manufactured iron articles, which were rightly placed in Class 3 as being unenumerated in the classification. After some further correspondence the Board of Trade informed the complainants that the classification and schedule submitted by the Company in respect of the canal would shortly be considered by the Department, and would, as finally settled, no doubt prevent any further dispute on the subject, and that in the meantime they could not express a binding opinion as to the meaning of the term "Iron of all kinds."
62	June 29	The Silk Association of Great Britain and Ireland, Manchester.	North Staffordshire and other Railway Companies.	That the rates on silk goods have been increased, and urging that reductions in the classification of such goods and modifications with respect to conveyance at carriers' risk, fractional charges, and other matters should be made.	The complaint was sent to the North Staffordshire Railway Company, who informed the Board of Trade that as the questions raised were of a general character, they had referred the correspondence to the General Managers' Rates Conference. The complainants have since stated that every point of grievance to which their communication related had been satisfactorily conceded.
63	June 29	T. Wardle, Leek	North Staffordshire.	That the rates charged by the North Staffordshire Railway Company on his traffic (silk, &c.) since January last are excessive and unreasonable.	The complaint was sent to the Company for their observations, and they stated that a legal point raised by Mr. Wardle in the correspondence was *sub judice*. The Board of Trade sent a copy of the reply to the complainant, and informed him that as legal proceedings had been commenced, they could not take any further action in the matter at present. No further communication has been received on the subject.
64	July 5	Dungannon Town Commissioners.	Great Northern (Ireland).	That the rate of 4*s.* 8*d.* per ton for the conveyance of coal from Belfast to Dungannon, a distance of 40 miles, is disproportionately high compared with the rate of 3*s.* 8*d.* from Belfast to Armagh, a distance of 36 miles, and that if computed on the same basis as the Armagh rate, the former rate should be only 4*s.* 1*d.*	The Company stated in reply that the revision of rates had placed Dungannon in a relatively better position than formerly as compared with Armagh, the Armagh rate having been raised 3*d.* per ton, while the Dungannon rate has only been raised 2*d.* per ton. In the course of further correspondence the Company stated that the coal rates from Belfast to Dungannon are governed by the rates from Newry to Dungannon, and that the Belfast to Armagh rates are exceptional, and have not only formed the subject of arbitration but are regulated by the decision of the Railway Commissioners. After furnishing the complainants with the several communications received from the Company the correspondence ceased.
65	July 19	H. Goodfellow, Sudbury.	Great Northern, and London and North-Western.	That the rate charged for the conveyance of wringing machines from Keighley to Sudbury and	A copy of the complaint was sent to the London and North-Western Railway Company, who replied that the rate to London was fixed to meet the exceptional circumstances of the traffic,

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				Wembley is higher than the rate from Keighley to London, eight miles further.	while the rate to Sudbury was the ordinary class rate Sudbury Station being an ordinary roadside station at which there was little or no general traffic. A copy of the Company's reply was sent to the complainant, from whom no further communication was received.
66	1893. July 21	A. Guinness, Son, & Co., Limited, Dublin.	Midland Great Western, and Great Southern and Western.	That the Companies refused to quote through rates per truck (six ton) for the conveyance of porter from the complainants' siding at Dublin to certain stations on the Midland Great Western Railway. The complainants submitted a list of the through rates which they proposed to the Company for adoption, and appealed to the Board of Trade under sections 25 and 31 of the Act of 1888.	After some correspondence a conference was held at the Board of Trade between the parties concerned. It appeared that up to January 1st, 1893, special rates were in force for 3, 6, and 10 ton lots in addition to the ordinary rate to certain stations on the Midland Great Western Railway, and that at the revision these rates were abolished except in certain cases where water competition existed, and in these cases three-ton rates were given, the Midland Great Western Company considering that it was more satisfactory and in the general interest to have only one scale of rates in operation wherever possible. The complainants contended that the result was to greatly increase the rates to some places, but on the other hand the Company stated that the net result of the revision was that on the whole of Messrs. Guinness' traffic, taking last year's tonnage at the present rates, there would be an increase of only 26*l.* 8*s.* 7*d.*, and that at the present rates the traffic was increasing. The Company also stated that on traffic forwarded by other consignors the Company lose considerably owing to the reduction of rates for smaller quantities. The Board of Trade, after hearing the arguments on both sides, stated that they were not prepared to press the Companies to adopt the principle of truck rates, but suggested that the Companies should take into consideration whether they could not revert to the former practice and quote rates for consignments of six tons. These rates should bear a reasonable relation to the other rates and should apply generally and not merely to the complainants' traffic. Subsequently the Board of Trade were informed that certain reduced rates per ton had been arranged for minimum loads of six tons per truck, and the complainants stated that they considered the result most satisfactory and thanked the Board of Trade for their assistance in the matter.
67	July 22	Whitbread & Co., Limited, London.	London and South-Western.	The complainants, who are brewers and bottlers of beer, complained that the London and South-Western Railway Company decline to recognise a through route from Southampton to London, *viâ* Shawford Junction, the Didcot, Newbury, and Southampton Railway, and the Great Western Railway. The firm consign traffic over the route in question from Paddington to Southampton, but the London and South-Western Company refuse to allow the returned empties to return by the same route. The complainants desired that through rates for the conveyance of the traffic and the return of the empties should be put in operation between London and Southampton *viâ* Shawford Junction, and that the rate should be the same as that now in force on the London and South-Western Company's route between Nine Elms and Southampton.	The Company replied that inasmuch as they provide ample accommodation both at Southampton and at Nine Elms for dealing with traffic between London and Southampton, it was not reasonable to ask that through rates should be put in operation over the proposed route, and that if any of the complainants' traffic had been sent over that route it must have been re-invoiced from some intermediate point. The Great Western Company stated they were willing to agree to the proposed rates. The London and South-Western Company subsequently expressed their willingness to bring the returned empties back to Nine Elms at the usual rate as if they had carried them full, but the complainants declined to accept this proposition as they contended that the Company should allow the empties to come back by the same route as that by which the traffic is conveyed. The complainants also stated that the question was one which the Great Western and South-Western Railway Companies were likely to bring before the Railway Commissioners, and the Board of Trade thereupon informed them that they felt they could not successfully apply the powers of conciliation under section 31.
68	July 27	The Pencoed and Dinas Powis Brick and Tile	Barry - -	That the rate of 1*s.* 7*d.* per ton charged for the conveyance of bricks	After some correspondence a conference was held at the Board of Trade to discuss the complaint.

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		Co., Limited, Dinas Powis.		from Dinas Powis on the Barry Railway to Canton siding on the Taff Vale Railway, a distance of about four miles, includes two short-distance charges, that the rebate of 1*d.* per ton for private waggons is insufficient, and that a charge of 3*d.* per ton is made in respect of their private siding, though they have given notice to the Railway Company as provided in section 5 of the schedule to the Company's Rates Act that they do not require any services at the siding.	(1.) The complaint as to the two short-distance charges included in the rate involved a question of the interpretation of the proviso to Scale I. of the Taff Vale Railway, &c. Order Confirmation Act, 1892 (applicable to both the Barry and Taff Vale Companies). The Railway Company contended that they were legally entitled under the proviso to make the double charge. The complainants disputed the legality of the charge. (2.) With regard to the rebate of 1*d.* per ton for private waggons the complainants said that waggons could not be provided for that amount, and suggested that the rebate should be the same as the Railway Company's charge for waggon hire. The Railway Company stated that the rebate was allowed according to the Clearing House scale. (3.) Upon the question of the siding charge a discussion took place as to the amount of services performed by the Company in connection with complainants' traffic. The Company contended that they had to perform a considerable amount of shunting operations and signalling in consequence of the traffic from the siding, and had to perform haulage over their own siding and yard which it was not practicable to allow the Brick Company to do themselves. The Board of Trade stated (1) that so far as the intention of the proviso was concerned they believed Railway Companies were entitled to charge two short-distance charges; and suggested (2) a rebate of 1½*d.* per ton for private waggons; and (3) that instead of the siding charge of 3*d.* a charge of 1½*d.* per ton should be made, but that if the Brick Company put the road in repair the Railway Company should haul the traffic from the end of the siding for a charge of 2*d.* per ton. If, however, an agreement could not be come to upon these suggestions, the Board of Trade would appoint an arbitrator to decide the points at issue. From a subsequent letter received from the complainants it appeared that although they were not satisfied with the result of the conference they were unwilling to proceed to arbitration. The Company subsequently informed the Board of Trade and the complainants that they had accepted the Board of Trade suggestion with regard to the allowance for waggon hire, but that with regard to the siding charge of 3*d.* per ton they would not accept less than 2*d.* per ton.
69	1893. July 31	Coleraine Harbour Commissioners.	Belfast and Northern Counties.	That the Railway Company give an undue preference to Portrush Harbour over Coleraine Harbour, the rates from Portrush to inland towns being on a lower mileage basis than the rates from Coleraine to those places.	The Company replied that in every case the gross rates from Portrush are higher than the gross rates from Coleraine, and contended that the difference for the additional distance of 5½ miles from Portrush was quite sufficient, and that the demand of the complainants was for equal mileage rates. They further stated that they had no desire to give any undue preference to Portrush over Coleraine, and would have no object in so doing. A communication was also received on the subject from the Portrush Harbour Company, contending that they were not preferentially treated, and that they had cause for complaint against the Railway Company, and urging the Board of Trade to recommend the Railway Company to group the two towns for the purpose of rates. Copies of these communications were sent to the complainants, and after further correspondence the Board of Trade informed all parties that, having regard to the conflicting claims of the Portrush Harbour Company, they could not hope to effect an amicable settlement of the complaint which would be satisfactory to both the Commissioners and the Harbour Company, and that the only means of a settlement would appear to be by procedure under sections 27 and 29 of the Railwayand Canal Traffic Act, 1888.
70	Aug. 2	Grand Canal Company.	Great Southern and Western.	Owing to a breach in their canal the complainants had to forward traffic to its destination by rail, and they complained that a consignment	In reply the Great Southern and Western Company admitted that the rates from Dublin to Limerick are lower than the rates from Tullamore to Limerick, but stated that the Dublin rates were affected by competition both by sea and by the Grand Canal.

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
				of porter for Limerick delivered to the Great Southern and Western Railway Company at Tullamore was charged a higher rate per ton than the rate from Dublin to Limerick, 24 miles further.	The complainants pointed out that so far as the canal was concerned the same competition existed at Tullamore as at Dublin. The Railway Company rejoined that, although that was the case, the traffic between Tullamore and Limerick was very trifling in amount, that competition had lowered the rate at Dublin much under the ordinary tariff, and that they were not prepared to extend the same rate to Tullamore. A copy of this reply was forwarded to the complainants, from whom no further communication was received.
71	1893. Aug. 15	Grand Canal Company.	Great Southern and Western, and Midland Great Western.	That there are no through rates in operation from Tullamore to Ballinasloe, over the Great Southern and Western and Midland Great Western Railways, and that in the case of a consignment of goods by that route the local rates of the two Companies were charged, including two terminals in each case, although there was no transhipment of the goods.	In reply both Companies stated that no application had been made to them for through rates. After some further correspondence the Companies informed the Board of Trade that through rates had now been put in operation, and would be made applicable to the particular consignment to which the complaint referred. Copies of the Companies' replies were forwarded to the complainants, from whom no further communication was received.
72	Aug. 26	S. Morris (coal merchant and steamship owner), Waterford.	Waterford and Limerick.	That the Company has given an undue facility to a firm of coal merchants, complainant's competitors, who own a wharf on the public quay, by allowing them to connect the wharf with the railway over the public road and quay, and that he is prejudiced by the rebates and exemption from toll allowed to these competitors and by the charges which he has to pay for craneage.	In the course of correspondence the Company stated that the public quay and road approach belonged to and are vested in the Company; that the control which the corporation possessed did not divest the Company of the legal estate; that the connection with the wharf referred to was one which the Company were bound to allow under the provisions of the Railways Clauses Consolidation Act, 1845; that the competitors referred to were entitled to the rebates and exemptions from toll, and that the Company's charge for craneage was justified. A copy of the last communication received from the Company, dated 29th December, was sent to the complainant on the 1st January.
73	Aug. 28	The Gypsoline Co., Pomeroy Street, S.E.	All railway companies.	That a more equitable classification should be made of the new articles which they manufacture, Gypsoline and Alabastine, which have been put by the railway companies in the same class of the classification as that which contains "paints" and "colours."	Sir Henry Oakley stated that the representatives of the railway companies, after full consideration, did not see their way to make any alteration. The complainants were not satisfied with this decision, and the Board of Trade have offered to arrange a conference on the subject.
74	Sept. 1	West and Wright, Maidstone.	London, Chatham, and Dover.	The complainants are millers and corn merchants at Maidstone, and own a private siding at that place in connection with the London Chatham and Dover Railway. They complain that the Company refuse to convey their traffic from Maidstone to Chatham at the same rate as the South-Eastern Railway Company charge between Maidstone and Strood, although they formerly did so. The complainants allege that they are therefore obliged to cart their goods a distance of half a mile to the South-Eastern station at Maidstone and consign them to Strood and then cart them to Chatham, about two miles.	The Company explained in reply that the refusal to carry goods at the same rates from Maidstone to Chatham as those charged by the South-Eastern Company was due to the fact that the distance by their route is 39¼ miles as against 11¼ miles by the South-Eastern route, and if the rates to Chatham were based upon the South-Eastern route applications would doubtless be received from traders for reductions in the rates from Maidstone to intermediate stations. The Company added that between competitive points where the distance by the London, Chatham, and Dover Railway is not more than 80 per cent. over the South-Eastern route the same rates had been adopted as those charged by the South-Eastern Company. A copy of the Company's reply was sent to the complainants, who in a further letter stated that they would be forced to forward their goods by water.
75	Sept. 2	Strong & Cooper, London.	London and North-Western, and	That the rates charged for the conveyance of two consignments of 50 lambs	The London and North-Western Company explained that they only dealt with the traffic at Maiden Lane Station on behalf of the London

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
			London and South-Western.	from Dinton to Maiden Lane Station, London, are excessive.	and South-Western Company, who were responsible for the rates. The London and South-Western Company stated that the lambs forming the consignments in question were very large, and that two small trucks had to be used for loading them, and that the rate of 4*l.* 13*s.* 2*d.* was not unreasonable. The complainants denied that the lambs were very large. The Company then replied that if the complainants, when tendering a consignment note, will say whether they require a small, medium, or large size truck, their wishes shall be observed if it can be done without causing unnecessary suffering during transit to the animals. A copy of this reply was sent to the complainants, from whom no further communication was received.
76	1893. Sept. 3	Colonel H. E. Harbin, Yeovil.	Great Western	That the rate of 10*s.* per ton charged in December 1892 on a consignment of moss litter weighing 2 tons 4 cwt. from Penarth to Yeovil is excessive and should be reduced.	In the course of the correspondence which ensued the Company stated that there was not sufficient traffic of this nature from Penarth to Yeovil to justify the Companies concerned in quoting an exceptional rate, and that the rate complained of was a special class rate which had not previously been in operation, but was quoted to provide for the consignment in question. Having regard to the fact that the consignment required the exclusive use of a large truck, and to the distance, 99¼ miles, the Company considered that the rate of 10*s.* per ton was a low one. It was, moreover, much less than the former or present maximum powers of the Company. This year a lower rate of 8*s.* 9*d.* per ton for quantities of 4 tons and upwards had been put in force. Copies of the Company's replies were forwarded to the complainant.
77	Sept. 4	Wallis, Son, and Wells, Reading.	Metropolitan	That the Class C. rate of 8*s.* 4*d.* per ton charged for the conveyance of linseed cake between Great Missenden and Poplar includes service terminals, and that as the Company do not perform the services of loading and unloading a rebate should be allowed.	In reply the Company contended that the Class C. rate between the stations in question did not include any charge for the services referred to, and that in any event the complainants could not claim a rebate of the full maximum terminals of 3*d.* per ton for each of the services in cases where the rate does not include such maximum charges. The Board of Trade communicated with the Company with regard to this reply, and the Company rejoined that they deemed it expedient to bring the matter to the notice of the Railway Companies for their consideration, after which a further communication would be sent to the Board of Trade. This communication has not yet been received.
78	Sept. 8	G. Lester, Stoke-upon-Trent.	London and North-Western, and North Staffordshire.	That the Companies charge Class C. rates for the conveyance of complainant's traffic, which he contends should be charged as "Limestone in bulk" and "Stone wholly undressed from the quarry" in Class A.	A somewhat lengthy correspondence ensued upon this complaint, the point in dispute being whether the traffic in question was or was not "Chertstone," which is chargeable under Class C. The London and North-Western Company stated that they had obtained an analysis of it, and there was no doubt that it did consist of Chertstone, that the complainant sells it as Chertstone, that the Company knew, as a matter of fact, that it was used as such, and that they could not admit, therefore, that there was any ground for complaint. The North Staffordshire Company similarly stated that if the traffic was not Chertstone then it was not the article which the complainant professed to sell or the article which his customers desired to buy. The complainant on the other hand strongly disputed the contentions of the railway companies, and correspondence is still proceeding.
79	Sept. 13	London Butchers' Trade Society, London.	Great Eastern	That the rate charged for the conveyance of a cow in a horsebox by passenger train from Holt to Tottenham was 1*l.* 17*s.* 3*d.*, whereas the charge for a horse would be only 1*l.* 12*s.*	The Company stated that they intentionally discouraged the conveyance of cows in horse-boxes, but that they provided cattle-boxes for the conveyance of cattle by passenger train, and that if the cow in question had been sent in one of these boxes the charge would have been 29*s.* 9*d.* Under the circumstances the Company were willing to refund the difference to the consignor. A copy of the reply was sent to the complainant, from whom no further communication was received.

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
80	1893. Sept. 18	Clee Hill Stone Companies' Association, Ludlow.	Great Western, London and North-Western, and North Staffordshire.	That the through rates for the conveyance of stone from Ludlow to stations on the North Staffordshire Railway are unfair in comparison with the rates charged by the London and North-Western and Great Western Railway Companies from Ludlow to the stations (Crewe and Market Drayton) nearest the point of junction with the North Staffordshire Railway.	Correspondence has taken place and a conference between the various parties will be held at the Board of Trade in January.
81	Sept. 20	Scutt and Sons, Blandford.	Midland	That the rate charged for the conveyance of a consignment of 10 tons of grain from Bailey Gate to Cheltenham was more than the local rates from Bailey Gate to Bristol and from Bristol to Cheltenham combined, and that the rate to Birmingham had been increased.	The Company explained that the consignment in question was sent in October 1892, and in the absence of a special rate for 4-ton lots, not till then required, was charged at the ordinary Special Class rate of 14*s.* 2*d.* per ton. This was in excess of the local bookings, which were very low on account of keen water competition, and which amounted in the aggregate to 12*s.* 6*d.* per ton. When the matter was submitted to the Company, the rate was at once reduced to 12*s.* 1*d.* per ton, 4-ton lots, station to station. The distance throughout is 106 miles, and the maximum powers of the Company amount to 16*s.* 8*d.* per ton. With regard to the rate for grain from Bailey Gate to Birmingham, the old rate, which was 15*s.* per ton in 2-ton lots, station to station, has been increased to 15*s.* 9*d.*, the maximum powers being 21*s.* 3*d.* per ton. A copy of the Company's reply was sent to the complainants, from whom no further communication on the subject was received.
82	Sept. 2	M. Morgan, Abercarn.	Rhymney, and London and North-Western.	That the rate charged for the conveyance of a consignment of slates from Bettwsycoed to Llanbradach is 13*s.* 4*d.* per ton, although the rate to Cardiff, about eight miles further, is only 10*s.* 10*d.*	The Rhymney Company stated that the Cardiff rate was a low one on account of the facilities for getting the traffic by water, which did not exist to the same extent in the case of Llanbradach, and that the traffic to the latter place is not regular. The London and North-Western Company (the forwarding Company) had, however, agreed to reduce the rate on the consignment in question to 12*s.* 10*d.* per ton. A copy of the Company's reply was forwarded to the complainant, from whom no further communication was received.
83	Sept. 28	G. Rushworth, Colne.	London and North-Western, Midland, Caledonian, Glasgow and South-Western, and North British.	That the rate of 5*s.* 2*d.* per ton in owner's waggons, or 6*s.* 2*d.* in Company's waggons, charged for the conveyance of coal from Carlisle to Colne (118 miles by London and North-Western and 97 miles by Midland route) is too high, and that the charge of 1*s.* per ton made by the Scotch Companies for the use of the waggons for the traffic is unreasonable.	The London and North-Western Railway Company stated that the authorised maximum rate on the shorter and cheaper route by the Midland Railway is 6*s.* 2*d.* per ton in owner's waggons, so that the charge of 5*s.* 2*d.* per ton could not be said to be unreasonable, and that the charge of 1*s.* per ton for waggon hire was the authorised charge for distances of 75 to 150 miles. The complaint is still under consideration.
84	Oct. 4	Cork Pig Buyers' Association.	Cork, Bandon, and South Coast, and Cork and Macroom Direct.	That the head rates charged for the conveyance of pigs result, taking the average number of pigs loaded in one truck as 26, in higher rates per truck than those charged on the Great Southern and Western Railway, and the complainants therefore desired that truck rates should also be put in operation.	The Cork Bandon and South Coast Railway Company replied that the head rates in operation were formerly fixed at the request of the Pig Buyers' Association, and that other buyers prefer them to the truck rates as they do not offer an inducement to drovers to overcrowd the trucks and mix the pigs of different owners. The average number of pigs loaded by the buyers was only between 15 and 16 in waggons of the same size as those on the Great Southern and Western Railway. The Cork and Macroom Railway Company replied in somewhat similar terms. Copies of the replies were sent to the complainants, who stated that it was the unanimous wish of the Association that truck rates should be given. The Cork and Macroom Railway Company then replied that truck rates would be put in operation on November 1st.

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
					The Cork Bandon and South Coast Railway Company pointed out that they were charging head rates much below their maximum powers, and stated that they would prefer not to make any change. The Board of Trade drew the attention of the Company to the provisions in the Rates Act with regard to truck rates and stated that it appeared to them desirable that traders should be afforded the opportunity contemplated by the Act of sending their live stock at either truck or head rates. The Company then informed the Board of Trade of their intention to put truck rates in operation probably from 1st January 1894. Copies of the Companies' replies were sent to the complainants.
85	1893. Oct. 8	G. Lester, Stoke-upon-Trent.	North Staffordshire.	That the Company require the charges for the conveyance of coal to be prepaid though other companies do not.	The Company replied that as a matter of fact they never did send, and never have sent, coal traffic from their district carriage to pay, and they were not disposed to commence the practice, looking to the difficulties that so frequently arise in collecting the charges afterwards. So far as they were aware no railway company accepts coal carriage to pay. A copy of the several letters received from the Railway Company was forwarded to the complainant, and the Board of Trade intimated that they did not think they could usefully intervene any further in the matter.
86	Oct. 17	H. Tate and Sons, London.	London Brighton and South Coast.	That complainants are prejudiced by the rates for the conveyance of foreign sugar from Nantes to London and from Paris to any station on the London Brighton and South Coast Railway.	In the correspondence which ensued the Company defended their system of charging, and contended that the object of the complainants was to increase the rates in order to obtain protection in their favour, and thus increase the price of a staple commodity to the detriment of small merchants and consumers generally. The Company also stated that they had carried on this traffic for many years at rates which were admittedly low, and were necessarily so in order to admit of the introduction of such produce into this country, and they felt that it was impossible for them to make any alteration in their present system of rates for sugar as it was obvious that the question involved was one of great policy, affecting the well-being of the million, and therefore a question upon which they could only give way after the decision of an authoritative court. The Company's replies were communicated to the complainants, who then asked the Board of Trade to arrange a conference upon the subject. The Board of Trade, in reply, pointed out that under the circumstances, and having regard to the fact that the determination of questions of undue preference rests with the Railway and Canal Commissioners, they did not anticipate that any good result would accrue from any further negotiations in the matter under section 31.
87	Oct. 18	F. Coffey, Cork, per Mr. W. Field, M.P.	Great Southern and Western, and Waterford and Limerick.	Complaint of the rate charged for the conveyance of 19 waggons of cattle from Ennis to Cork, and of the delay caused by their being conveyed by the longer route *viâ* Limerick Junction instead of *viâ* Patrickswell.	The Waterford and Limerick Company replied that they conveyed the traffic by the route which had the best train service, though it is the longer route, and that they were quite willing that the rate should be based on the shorter route *viâ* Patrickswell. The Great Southern and Western Company replied that the reason why rates are based on the circuitous route is that in reply to a proposal they had made that the rates should be based on the shorter route *viâ* Limerick and Patrickswell, and that the traffic should be worked by that route, the Waterford and Limerick Company had declined to recognise Limerick as a point of exchange for traffic. The complaint is still under consideration.
88	Oct. 23	W. F. Bigger, Londonderry.	Sligo Leitrim and Northern Counties.	That the through rate of 19*s.* 11*d.* per ton for the conveyance of dead pigs from Manorhamilton to Londonderry includes 10*d.* for collection and 5*d.* for loading, which services the Company do not perform, and that the Company refuse to allow these charges off the rate.	The Company contended that the rate does not include cartage at Manorhamilton, and with regard to the 5*d.* per ton which the Company stated was charged for providing straw to litter the waggons, they offered to allow this amount to the complainant if he would undertake to accept clean waggons, without litter, for his traffic. The correspondence is still proceeding.

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
89	1893. Oct. 27	S. Walley, Chester.	London and North-Western.	That the rate charged for the conveyance of grain from Liverpool to Waverton siding is 7*s.* 8*d.* per ton, although the siding is only three miles beyond Chester, to which the rate is but 5*s.* 9*d.*, and that the Company refuse to allow a rebate in respect of terminal service not performed by them.	The Company explained that the rate of 7*s.* 8*d.* per ton is exclusive of unloading and uncovering at Waverton, and that without including any terminal at Waverton their maximum powers amount to 6*s.* 11*d.* in addition to which a further reasonable sum is chargeable for collection in Liverpool. The Company could not therefore admit the claim for a rebate. With regard to the disparity between the rate to Waverton and that to Chester, the Company stated that their attention had not been called to it previously, but that at the latter place, at which there was a very large traffic, a very low rate had been in operation for years. With a view, however, to meeting the complainant as far as possible the Company would put a reduced rate of 6*s.* 8*d.* per ton in operation at Waverton. A copy of the reply was sent to the complainant, who thanked the Board of Trade for their successful intervention in the matter.
90	Nov. 11	J. Ainsworth, Methwold.	Great Eastern	That the Company's charge of 4*s.* 4*d.* for the conveyance of a wheelbarrow and an overcoat, by luggage train, weighing about 1 cwt., from St. Anne's-on-Sea to Brandon was excessive.	The Company replied that the local charges were made in the absence of through rates, but that a through rate of 2*s.* 9*d.* had been arranged, and the difference of 1*s.* 7*d.* would be refunded to the complainant. A copy of this reply was sent to the complainant, who thanked the Board of Trade for their assistance "in obtaining an equitable rate."
91	Nov. 25	"	"	That the rate of 5*s.* 2*d.* charged for the conveyance by passenger train of a box of fruit, &c., weighing between 56 and 70 lbs., from Methwold to Stockport was excessive.	The Company explained that in this case the box was handed to them as an ordinary parcel and was so charged, but if it had been declared as "fruit" the charge would only have been 3*s.* 6*d.* Under the circumstances the Company refunded the difference to the complainant through the Board of Trade.
92	Nov. 20	H. Clark, Cavendish.	Great Eastern	That the rate charged for the conveyance of sugar from London to Sudbury is 16*s.* 8*d.* per ton, while to Cavendish, only seven miles further, the rate is 18*s.* 9*d.*	The Company stated in reply that the special rate of 16*s.* 8*d.*, including collection and delivery, to Sudbury would be cancelled, which would result in the ordinary rate of 17*s.* 11*d.* being charged. At the same time the S. to S. rate to Sudbury for 2-ton lots would be reduced from 10*s.* 10*d.* to 10*s.* per ton, and a new exceptional rate granted to Cavendish of 10*s.* 10*d.* for 2-ton lots S. to S. A copy of this reply was sent to the complainant, from whom no further communication was received.
93	Nov. 27	R. Newton, Exeter	London and South-Western.	That the rate of 7*s.* 10*d.* per ton for the conveyance of grain from Bristol to Sidmouth, 81 miles, is too high, the rate to Ottery St. Mary, which is but five miles less distance, being only 7*s.*	The Company replied that the difference between the two rates was not unreasonable, considering that for two miles the traffic had to be pulled up a gradient of 1 in 45. The Company further stated that the rates were on a very low basis, the maximum powers to Sidmouth being 14*s.* 1*d.* A copy of this reply was sent to the complainant.
94	Nov. 27	J. Waddell & Sons, Scarborough (per Mansion House Association on Railway and Canal Traffic).	North-Eastern	That the Company are treating complainants unfairly in not quoting rates as requested from their siding at Scarborough to 49 specified stations for all the articles in the classification of merchandise, and separately for grain and potatoes to these stations and for coal and timber to certain places. From the correspondence forwarded by the complainants it appeared that the Company had quoted certain coal rates, and with regard to quoting other rates the Company stated that upon hearing the nature of the traffic, the quantity intended to be sent, and the name of the station or stations to which it was intended to send it, they would give	In reply the Company informed the Board of Trade that the Belford siding is a private siding giving railway access to a piece of land on which there is no accommodation for dealing with general goods, and it is impossible for the Company to quote rates from that siding without knowing what kind of traffic is to be sent and what is the nature of the arrangements proposed to be made for working it. A copy of this reply was forwarded to the Association, and the complainants then contended that it was not impossible for the Company to quote rates from the siding without knowing what kind of traffic is to be sent or the quantity, and that the Company had already been supplied with a list of the stations to which rates were required to be quoted as well as the classes of traffic. The Board of Trade asked the Company whether, assuming that by classes is meant classes in the classification, there is any, and if so what, objection to quoting class rates applicable to the classes specified by the complainants. The Company replied that the difficulty as to quoting the rates asked for is that the rates do not exist. The Company do not carry general

Reference Number.	Date of Complaint.	Name of Complainant.	Name of Company.	Nature of Complaint.	Action.
				the matter their attention. To this the complainants replied that they had already specified the information they required.	goods traffic to or from the Belford coal siding, and no facilities for dealing with such traffic there have been provided, and under these circumstances they do not see how rates can be compiled. The Board of Trade forwarded a copy of the correspondence to the Association and stated that they had no power to require the Company to supply the information.
	1893.				
95	Dec. 3	C. G. Warne, Limited, Weston-super-Mare.	Great Western	That preference is given to Bridgwater over Weston-super-Mare in the rates charged for the conveyance of roofing tiles, lower rates being charged in some cases from Bridgwater, though the traffic passes through Weston-super-Mare.	Correspondence is proceeding with regard to this complaint.
96	Dec. 22	G. C. Bond, Nottingham.	GreatNorthern, London and North-Western, Manchester Sheffield and Lincolnshire, and Midland.	That a higher rate per ton per mile is charged for the conveyance of ironstone for long distances between certain places than for shorter distances, and that traffic is being stopped by the high rates.	The Board of Trade have communicated with the several companies concerned, and the complaint is still under consideration.

GENERAL REPORT

OF THE BOARD OF TRADE

UPON THE

ACCIDENTS

THAT HAVE OCCURRED ON

THE

RAILWAYS OF THE UNITED KINGDOM

During the Year 1892.

Presented to both Houses of Parliament by Command of Her Majesty.

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1893.

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TABLE OF CONTENTS.

	Page
Report	
Total number of Passengers and Servants killed and injured, and the proportion of passengers to the number of passenger journeys	3
Accidents inquired into	5
Due to Permanent Way, Works, &c.	6
Due to Failures of Machinery of trains, boiler explosions, &c.	7
Due to use of too great speed	7
Collisions between following trains (outside fixed signals)	8
Collisions at junctions	9
Collisions within fixed signals	9
Trains wrongly turned into sidings	11
Miscellaneous Accidents	12
Summary of the Causes	13
Accidents generally, to Servants of Railway Companies	14
Absolute Block and Interlocking Systems	16
Continuous Brakes	16
General Remarks	17
Appendix No. 1.—Abstract of Accidents	19
„ No. 2.—Classified List of Accidents	20

REPORT, &c.

General Report of the Board of Trade on the accidents and collisions that have occurred in the working of the railways of the United Kingdom during the year 1892, founded principally on returns made by the railway companies under the Act 34 & 35 Vict. c. 78. s. 6, and on reports upon certain accidents and collisions, made after inquiry by Officers of this Department.

Total killed and injured from all Causes in the working of Railways.

The following table shows the number of persons reported to the Board of Trade as having been killed and injured from all causes in the working of railways during the year.

It must be remembered that under the head of injuries in the case both of passengers and servants of the Companies all injuries are included, even those of a trivial character.

	Killed.	Injured.
PASSENGERS:		
From accidents to trains, rolling stock, permanent way, &c.	21	601
By accidents from other causes, including accidents from their own want of caution or misconduct	108	747
SERVANTS:		
From accidents to trains, rolling stock, permanent way, &c.	9	92
By accidents from other causes, including accidents from their own want of caution or misconduct	525	2,823
OTHER PERSONS:		
Whilst passing over railways at level crossings	77	21
Trespassers	258	121
Suicides	89	—
Miscellaneous, not included in either of the above	43	80
Total	1,130	4,485

In addition to the above, the Companies have returned 74 persons killed and 5,991 injured from accidents which occurred on their premises but were not connected with the movement of railway vehicles.

Proportion of Passengers killed and injured from all Causes in the working of Railways.

The total number of passenger-journeys, exclusive of journeys by season-ticket holders, was 864,435,388 for the year 1892, or 18,971,720 more than in the previous year. Calculated on these figures, the proportions of passengers killed and injured during the year 1892, *from all causes*, were 1 in 6,701,049 killed, and 1 in 641,272 injured.

In 1891, the proportions were 1 in 8,208,385 killed, and 1 in 524,481 injured.

Proportion of Passengers killed and injured from Causes beyond their own control.

The following statement shows the proportion of passengers returned as killed and injured from causes beyond their own control, in passenger-journeys, for the years 1874 to 1892:—

Year.	Number of Passengers Killed and Injured from causes beyond their own control, from Accidents to Trains.		Number of Passenger Journeys (exclusive of Journeys by Season-ticket Holders).	Proportion returned as Killed and Injured (from causes beyond their own control) to number carried.	
	Killed.	Injured.		Killed.	Injured.
1874	86	1,613	477,840,411	1 in 5,556,284	1 in 296,243
1875	17	1,212	506,975,234	1 in 29,882,073	1 in 418,296
1876	38	1,279	538,287,295	1 in 14,165,455	1 in 420,865
1877	11	664	551,593,654	1 in 50,144,876	1 in 830,713
1878	24	1,173	565,024,455	1 in 23,542,685	1 in 481,692
1879	75*	602	562,732,890	1 in 7,503,105	1 in 934,772
1880	29	904	603,885,025	1 in 20,823,586	1 in 668,013
1881	23	987	622,160,000	1 in 27,050,435	1 in 630,354
1882	18	803	654,838,295	1 in 36,379,905	1 in 815,489
1883	11	662	683,718,137	1 in 62,156,194	1 in 1,032,806
1884	31	864	694,991,860	1 in 22,419,092	1 in 804,388
1885	6	436	697,213,031	1 in 116,202,171	1 in 1,599,112
1886	8	615	725,584,390	1 in 90,698,049	1 in 1,179,812
1887	25	538	733,670,000	1 in 29,346,800	1 in 1,363,699
1888	11	594	742,499,164	1 in 67,530,000	1 in 1,250,555
1889	88†	1,016†	775,183,073	1 in 8,808,875	1 in 762,975
1890	18	496	817,744,046	1 in 45,430,224	1 in 1,648,677
1891	5	875	845,463,668	1 in 169,092,733	1 in 966,244
1892	21	601	864,435,388	1 in 41,163,589	1 in 1,438,328

* Including 73 persons lost in the Tay Bridge disaster.
† Including 80 killed and 262 injured in collision near Armagh.
Number of season tickets issued in 1892, 1,612,510.

Inquiries into Accidents.

Comparative Statement of the Number of Train Accidents inquired into during the years 1875 to 1892, inclusive.

1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.
161	149	146	108	100	118	111	118	94	105	60	62	58	61	69	53	68	48

Five train accidents were attended with fatal results to passengers, viz. :—

A collision between two passenger trains at Bishopsgate station on the Great Eastern Railway by which 5 passengers were killed, and 52 passengers and 4 servants injured. (*See* page 10.)

An accident to a passenger train that left the rails near Melton Mowbray on the Great Northern and London and North-Western Joint Railway, by which 1 passenger and 2 servants were killed, and 3 passengers injured. (*See* page 6.)

A collision between 2 passenger trains at Derby Junction on the London and North-Western Railway, by which 1 passenger and 1 servant were killed and 66 passengers and 2 servants injured. (*See* page 9.)

A collision between 2 passenger trains at Esholt Junction on the Midland Railway, by which 5 passengers were killed and 26 passengers and 4 servants injured. (*See* page 9.)

A collision between a passenger train and a goods train at Manor House signal cabin near Thirsk on the North-Eastern Railway, by which 9 passengers and 1 servant were killed, and 39 passengers and 4 servants injured. (*See* page 9.)

Five train accidents other than the above were attended with fatal results to Companies' servants, viz. :—

A collision between a passenger train and the engine of another passenger train which had left the rails at Stepney Junction on the Great Eastern Railway, by which 1 Company's servant was killed, and 12 passengers and 1 servant were injured. (*See* page 7.)

An accident to a ballast train, the engine and 6 waggons of which left the rails in the cutting between Devonport and Saltash on the Great Western Railway, causing the death of 1 Company's servant and injury to 2 others. (*See* page 6.)

A collision between a passenger train and an empty carriage train near Clapham Junction on the London and South-Western Railway, by which 1 Company's servant was killed, and 7 passengers, 2 servants, and a bystander injured. (*See* page 9.)

An accident to a passenger train, three carriages of which left the rails when passing round a curve at Borough Market signal cabin on the South-Eastern Railway, by which 1 Company's servant was killed, and 19 passengers and 1 servant were injured. (*See* page 7.)

An accident to a goods train, which broke in surmounting the Shere Heath Bank on the South-Eastern Railway, causing the death of the guard. (No inquiry was held into this accident.)

Further details respecting these accidents are given at the pages of the Report specified in each case.

In addition to the train accidents inquired into, inquiries were also held in the following cases of personal accidents to passengers, viz. :—

A crush that occurred at the foot of the staircase leading to the up platform at Hampstead Heath station on Easter Monday, resulting in the death by suffocation of 8 persons and injury to 14 others.

A passenger from the Continent who was suffering from sea-sickness, and was leaning out of a window of a carriage of an express train, was seriously injured by striking his head against the corner of the brick-faced pier which divides the tunnels under Shakespeare Cliff on the South-Eastern Railway.

The inquiries into train-accidents classified under certain heads for the past year and for each of the preceding twelve years are given in the following table for the purpose of comparison.

Class of Accident.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.
A. From engines or vehicles meeting with obstructions, or leaving the rails in consequence of obstructions, or from defects in connection with the permanent way or works	22	24	14	12	21	7	7	11	10	11	5	5	6
B. From boiler explosions, failures of axles, wheels, or tyres, or from other defects in the rolling stock	9	6	12	7	9	6	8	1	7	6	4	4	4
C. From trains entering stations at too great speed	7	5	8	12	11	4	4	10	7	12	2	15	10
D. From collisions between engines and trains following one another on the same line of rails, excepting at junctions, stations, or sidings	8	9	6	3	3	2	—	3	2	1	2	3	2
E. From collisions at junctions	14	13	8	8	10	8	10	2	4	4	7	4	5
F. From collisions within fixed signals at stations or sidings	49	36	48	44	40	24	25	22	16	25	24	25	15
G. From collisions between engines or trains meeting in opposite directions	—	3	4	—	—	—	1	6	8	2	2	3	—
H. From collisions at level-crossings of two railways	—	—	—	—	—	—	—	—	—	—	—	—	—
I. From engines or trains being wrongly run or turned into sidings, or otherwise through facing points	8	9	12	6	11	7	4	3	4	4	5	4	5
J. On inclines	1	6	—	2	—	2	3	—	1	4	2	4	—
K. From trains on fire	—	—	1	—	—	—	—	—	—	—	—	—	—
L. Miscellaneous	—	—	5	—	—	—	—	—	2	—	—	—	1
Total	118	111	118	94	105	60	62	58	61	69	53	68	48

The number of passengers and servants of companies killed and injured, in the train-accidents inquired into during the year 1892, classified in the same way, are given in the following table:—

Class of Accident.	Number of Accidents.	Passengers and others		Servants of the Company	
		Killed.	Injured.	Killed.	Injured.
A. From engines or vehicles meeting with obstructions, or leaving the rails, in consequence of obstructions, or from defects in connection with the permanent way or works	6	1	6	3	5
B. From boiler explosions, failures of axles, wheels, or tyres, or from other defects in the rolling stock	4	—	37	2	2
C. From trains entering stations at too great speed	10	—	88	—	3
D. From collisions between engines and trains following one another on the same line of rails, excepting at junctions, stations, or sidings	2	9	40	1	6
E. From collisions at junctions	5	6	100	2	9
F. From collisions within fixed signals at stations or sidings	15	5	175	—	11
G. From collisions between engines or trains meeting in opposite directions	—	—	—	—	—
H. From collisions at level-crossings of two railways	—	—	—	—	—
I. From engines or trains being wrongly run or turned into sidings, or otherwise through facing points	5	—	102	—	13
J. On inclines	—	—	—	—	—
K. Trains on fire	—	—	4	—	—
L. Miscellaneous	1	—	—	—	—
Total	48	21	552	8	49

Train-accidents.

A.—*Accidents from Engines and Vehicles meeting with Obstructions or leaving the Rails in consequence of obstructions or from Defects in connection with the Permanent Way or Works.*

Six accidents in this class, resulting in the death of 1 passenger and 3 servants and injury to 6 passengers and 5 servants, were investigated.

Two were due to work in progress on the permanent way; two to faulty condition of the permanent way; one to the fastenings of a rail having given way; and one to an error of judgment of a driver in maintaining too high a speed when running through a junction.

Great Eastern:

September 7th.—As a passenger train was passing Haughley Junction, the tender and all the vehicles of the train left the rails and were dragged along the ballast by the engine which remained on the rails, a distance of about 300 yards before coming to a stand. No persons were injured.

The Inspecting Officer was of opinion that the accident was caused by the tender-wheels being jerked off the rails through an error of judgment on the part of the driver in maintaining too high a speed through the junction, which, owing to its construction, is suitable for only a very low rate. He called attention to the standard length of the switch rails, and suggested the adoption of a more satisfactory length of switch by the Company.

Great Northern and London and North-Western:

July 25th.—As a London and North-Western passenger train was approaching Melton Mowbray north signal-cabin, the engine left the rails followed by the whole of the eight vehicles in the train. The driver, fireman, and one passenger were killed, and three passengers were injured.

The Inspecting Officer considered that the responsibility for this accident must rest principally upon foreman platelayer George Harwood, who was slewing the line, and who ought to have sent out flagmen and warned the signalman in accordance with the rules, and was guilty of an error of judgment in failing to see that it was "necessary for the "train to proceed cautiously." He suggested some additions to the rules, so that it should not be left to the discretion of a foreman to decide whether or not flagmen should be out, and was of opinion that slewing operations should not be undertaken without the knowledge of the district engineer of the line.

Great Western:

September 12th.—The engine and six waggons of a ballast train left the rails in the cutting between Devonport and Saltash. The guard was killed and the driver and fireman injured.

The Inspecting Officer found that the accident was chiefly due to the work in progress on the permanent way at the place where the train left the rails. Notices have since been sent out ordering the employment of flagmen when such work is in progress, and the advising of the Company's Inspector when it has to be done.

London and North-Western:

January 21st.—As a passenger train was travelling between Stanbridgeford and Leighton the engine and all the vehicles left the rails. Two passengers and the guard were injured.

The Inspecting Officer was of opinion that this accident was due to the decayed and faulty description of the sleepers on this branch line.

North British:

August 31st.—As a passenger train for Glasgow was travelling between Buchlyvie and Balfron stations, the engine and the whole of the train left the rails. One passenger and two company's servants were injured.

This accident was caused by the top of a turned rail having been split off for a length of about 3 feet, and the end next to the joint having sprung up for about an inch and turned outwards.

The Inspecting Officer considered that this part of the line was quite unfit for the running of fast passenger traffic, and suggested the immediate relaying of the permanent way with new rails, and until this was done, the limiting of the average speed of trains to 20 miles an hour at the most.

Weymouth and Portland:

November 6th.—When a London and South-Western Company's passenger train was approaching the Weymouth station end of the Backwater Viaduct the left wheels of the engine and of five out of the six carriages composing the train left the rails. No persons were injured.

This accident was caused by the fastenings of a low rail having given way outwards. The Inspecting Officer recommended the reduction of the super-elevation of the outer rail of the curve, and the introduction of steel or iron guage ties.

B.—*Accidents from Boiler Explosions, Failures of Axles, Wheels, or Tyres, or from other Defects in Rolling Stock.*

Four accidents in this class, resulting in the death of 2 servants and injury to 37 passengers and 2 servants, were investigated.

Two, which occurred at the same spot, were due to oblique side pressure of a heavy bogie carriage on a lighter carriage when passing round a curve; one, to an engine running with the radial axle wheels in front; and one to the fracture of the axle box of a carriage.

Great Eastern:

August 1st.—The engine of a London, Tilbury, and Southend excursion train, running bunker in front, from Tilbury, which had stopped at Stepney station, left the rails at the crossing of the right hand up line and the down Stratford line, immediately after starting again, and fouled the down Blackwall line just as a down Great Eastern train was about to pass, causing the engines to come into collision. The driver of the Great Eastern engine was killed, and 12 passengers and the guard of the Blackwall train were injured.

The Inspecting Officer attributed the accident principally to the fact that the engine of the London, Tilbury, and Southend train, a 10 wheeled tank engine, was running with the radial axle wheels in front, and trusted that arrangements would be made to ensure that engines of that pattern should always be turned at the termination of their journey in each direction. Although he could find nothing in the state of the permanent way to account for the accident, the Inspecting Officer called attention to the fact that this was the fourth time in the last eight years in which engines had left the rails at this crossing, on three of which occasions the engines were tank engines running bunker in front, and on the fourth it was a Great Eastern tank engine. Owing to the widening of the line this crossing will soon disappear.

The Inspecting Officer also called attention to the hours of duty of the driver and fireman of the London, Tilbury, and Southend train, who had been on duty for 14¼ hours at the time of the accident and had to remain on for some considerable time longer. Although they were standing idle for three hours in the morning and two hours and twenty-six minutes in the afternoon, yet he considered these hours to be far too long. The guard had been on duty for 13½ hours and would probably have been on duty for some hours longer. A Great Eastern ganger who gave evidence had to remain on duty till the traffic was over, which probably meant a tour of duty of 16 hours. These hours, however, were exceptional and due to the requirements of the bank holiday traffic, but it appeared from the evidence of the driver that he usually worked from 12 to 13 hours.

Metropolitan:

January 5th.—As a London, Chathan, and Dover Railway Company's passenger train was proceeding from Farringdon Street to King's Cross, six carriages left the rails. Five passengers complained of being shaken.

The Inspecting Officer attributed this accident to the fracture of the right leading axle-box of the first vehicle which left the line.

South-Eastern:

January 7th.—While an up express passenger train was passing round the curve on the west line to Cannon Street, nearly opposite the Borough Market signal cabin, three vehicles left the rails.

January 18th.—While an up passenger train was passing round the same curve, two vehicles left the rails.

In the first accident a foreman platelayer who was standing on the line was killed, and 19 passengers and one platelayer were injured. In the second accident one passenger was injured.

The Inspecting Officer attributed each of these accidents to the oblique side-pressure of a 12-wheeled bogie-carriage on the lighter third-class carriage in front of it when passing round the curve, pushing the trailing-wheel over the outer rail; the bogie-carriage being in its turn dragged off the rails by the third-class carriage.

He considered that it was not expedient to run these heavy bogie carriages behind others of a lighter weight on lines with sharp curves such as the one in question; and recommended the lengthening of the locking-bars of the facing points so as to exceed the longest wheel base of any vehicle in use on the line.

C.—*Accidents from Trains entering Stations at too great Speed.*

Ten accidents in this class, which caused injury to 88 passengers and 3 servants, were inquired into.

Six of these were due to mistakes and miscalculation of speed by engine-drivers; two to non-observance by Company's servants of the rules for working the continuous

brakes; one to failure of the brake through not having sufficient steam to create a vacuum; and one to the absence of a shunter from his post.

GLASGOW AND SOUTH-WESTERN:

November 30th.—A passenger train came into collision with the buffer-stops at St. Enoch terminal station. Seven passengers were injured, but none seriously.

The Inspecting Officer found that this collision was due to a miscalculation of speed by the engine-driver, who did not make sufficient allowance for the greasy state of the rails. He called attention to the recommendations of the Inspecting Officers that continuous brakes should not be used for stopping at terminal stations except in cases of emergency.

GREAT EASTERN:

July 18th.—A passenger train ran into the buffer-stop at the end of the bay line on the north side of Forest Gate station. Thirty passengers and one Company's servant sustained slight injuries.

The Inspecting Officer attributed the accident to the train being allowed to run into the station at too high a speed, and to the driver, who was relying on his Westinghouse brake to stop the train, failing to apply it in sufficient time.

The Company have, since the date of the accident, issued fresh instructions to the signalmen, by which every train for the bay is to be brought to an absolute stop at the home-signal before the latter is lowered for the train to enter the station.

The Inspecting Officer suggested the alteration of the present rule so as to make it quite clear that the use, except in emergencies, of the continuous brake for stopping trains in such stations is prohibited.

October 16th.—A passenger train came into collision with the buffer-stops at Forest Gate station. Eight passengers were injured, but none seriously.

The Inspecting Officer attributed this collision to an error of judgment on the part of the driver of the train in regulating its speed when it was running alongside of the platform of the dock line. He suggested the uniform levelling of the rails of the dock line, and the placing of a fine coating of gravel over the lines near the buffer-stops to give the engine-brakes a better bite.

GREAT WESTERN:

January 12th.—A passenger train when entering Cirencester terminal station came violently into collision with the buffer stop. Eight passengers were slightly injured.

This collision was caused by want of steam to enable the driver to create a sufficient vacuum to check the speed of the train when still some half-a-mile away from the station, and by the skidding of the wheels when the hand brake was applied, the sand pipe being choked with snow.

The Inspecting Officer recommended the alteration of the arrangements for working the automatic vacuum-brake on the engine of this train and of three other similar engines, and advised the Company to relegate them to other duties than those of working passenger trains until they were properly equipped.

LONDON AND SOUTH-WESTERN:

May 26th.—A passenger train from Portsmouth on arrival at Southampton station, came into collision with a bogie carriage, which was standing at the buffer-stops. Three passengers complained of slight injuries.

The Inspecting Officer did not think that this accident could be attributed to want of care on the driver's part. His judgment was somewhat at fault, as he did not make sufficient allowance for the greasy state of the rails.

LONDON, CHATHAM, AND DOVER:

June 30th.—A passenger train came into collision with the buffer-stop in Sheerness Dockyard station. Nine passengers and one Company's servant were injured.

The Inspecting Officer found that this collision was due to the non-observance of the rules of the Company as as to the working of the Westinghouse brake.

MIDLAND:

January 19th.—A passenger train overran the platform at Nailsworth, and went over and through a stop-bank at the end of the line. Three passengers and one Company's servant were injured.

The Inspecting Officer attributed this accident to neglect of duty on the part of the engine-driver, in starting from Dudbridge before his time, and in approaching Nailsworth at too high a rate of speed.

NORTH-EASTERN:

January 16th.—A passenger train was backed against the buffer-stops at the end of the bay line at Durham station. Three passengers complained of slight injuries.

The principal cause of this slight collision was the temporary absence of the shunter from his usual place on the platform. The Inspecting Officer recommended that strict regulations should be issued as to backing trains into this bay line.

February 19th.—A passenger train came into collision with the buffer-stops at West Hartlepool station. Six passengers complained of personal injury, and two of injury to clothing.

The evidence made it clear that this accident was due to carelessness on the part of the fireman in not properly connecting the brake pipes, and disregard of the rules on the part of the guard and driver in failing to examine and test the brake apparatus before starting from East Hartlepool.

September 22nd.—A passenger train came into collision with the buffer-stops at Newcastle central station. Eleven passengers complained of shock or minor injuries.

The Inspecting Officer considered that this collision was due to an error of judgment on the part of the driver in entering the station at a higher speed than that authorised by the rules, and to a miscalculation on his part as to the exact place at which to apply fully his continuous brake.

D.—*Collisions between Engines and Trains following one another on the same Line of Rails, not including those at Junctions, Stations, and Sidings.*

Two collisions in this class, resulting in the death of 9 passengers and 1 servant, and injury to 40 passengers and 6 servants, were investigated.

Of these collisions, one was due to the non-observance of signals by an engine-driver; and one to non-compliance with the block telegraph rules by a signalman who was, at the time, manifestly unfit for duty.

MIDLAND:

December 8th.—An up goods train from Peterborough overran the home-signal at Watling Street signal-cabin, near Child's Hill, and came into collision with an engine and brake-van, driving them on to the rear of another up goods train, which in its turn was driven against the rear of a third goods train. Two Company's servants and a cattle-drover were injured.

The Inspecting Officer found that this collision was due to non-observance of signals by the driver of the train from Peterborough.

He also called attention to the hours of duty of the men with the train from Bedford, who had been on duty the previous day for 14 hours 20 minutes.

North-Eastern:

November 2nd.—The second portion of the up Scotch express passenger train came into collision with the rear of a goods train at Manor House signal-cabin, near Thirsk.

Nine passengers and one Company's servant were killed, and 39 passengers and four Company's servants were injured.

The Inspecting Officer found that this collision was principally due to non-compliance with the block telegraph rules by the signalman in Manor House cabin, who was manifestly unfit for duty at the time, and who, before proceeding on duty, had applied to be relieved. The driver of the goods train, which had been standing at the up home-signal unnoticed by the signalman, was to blame for not sounding his whistle, and calling the signalman's attention, when detained for such a length of time.

The Inspecting Officer was of opinion that the signalman should have been relieved, and that the station-master at Otterington, to whom the signalman applied, should have stated in his telegram to the Inspector that he was "not fit for duty." He called attention to the proportion of relief signalmen employed in this district, viz., 17 out of a total number of 300, and considered that a tour of duty of 10 hours is the outside which ought to be allowed in main line signal cabins.

E.—*Collisions at Junctions.*

Five accidents of this class, which resulted in the death of 6 passengers and 2 servants, and injury to 100 passengers and 9 servants, were inquired into.

Three of these accidents were due to drivers passing signals at danger; one of them owing to the driver mistaking the signals on another line for his own; one to a mistake of a signalman; and one to the failure of a brake to act properly.

Lancashire and Yorkshire:

December 8th.—A Midland Railway Company's passenger train came into collision with the rear of a Midland Company's goods train, which had just started, after standing at Philip's Park Junction outer down home-signals. No persons were injured.

The Inspecting Officer considered that the primary cause of this collision was a mistake in block signalling. The collision would probably have been prevented had the driver of the goods train complied with the rule requiring him, especially in foggy weather, to send his firemen to the signal-cabin when detained for more than a few minutes; and the guard was to blame for not reminding the driver of this.

London and North-Western:

May 27th.—A down London and North-Western passenger train and a Midland train from Derby approached Derby junction upon converging lines, and came into collision at the fouling point of the two down lines. The guard of the London and North-Western train was fatally injured, and a groom, who was in a horse-box in the Midland train, was killed on the spot; and 66 passengers and two London and North-Western Company's servants were injured.

While holding the driver and guards of the Midland train responsible for the accident by running past the signals at danger, the Inspecting Officer considered that it was due in a great measure to a faulty mode of working, and he called attention to the objections which had been raised by the Inspecting Officers to the use of the "Section clear but station or junction blocked" signal.

London and South-Western:

August 20th.—A down passenger train, when approaching Clapham Junction station on the down Windsor line, came into violent collision with the rear of an empty carriage train. One Company's servant was killed, and seven passengers, two company's servants, and a bystander were injured.

The Inspecting Officer was of opinion that the collision was due to the home-signal having been passed at danger by the driver of the passenger train, who, principally, with his fireman in a secondary degree, must be held responsible. He recommended the alteration of the rules so as to make it quite clear that under no circumstances should the "All clear" signal be given for a second train to follow one which is standing only a few yards ahead of the home-signal, although clear of the section.

Midland:

June 9th.—A passenger train from Ilkley for Bradford, while crossing Esholt junction, was run into by a passenger train from Leeds for Ilkley. Five passengers were killed, and 26 passengers and four Company's servants were injured.

The immediate cause of this collision was want of care on the part of the driver of the train from Leeds for Ilkley, who had been warned that he might be stopped at the junction, and saw the distant-signal at danger, but mistook the junction home-signals applying to the line from Bradford to Ilkley for those applying to the line he was running on.

The Inspecting Officer called attention to the danger of allowing trains to approach junctions simultaneously under the "Section clear but junction blocked" signal.

North British:

December 26th.—A Caledonian Company's passenger train overran the down home-signal at Palmont Junction, and came into collision with two waggons attached to a North British engine engaged in shunting operations. The guard of the passenger train was injured.

The Inspecting Officer attributed this accident to a great extent to the failure of the brake on the passenger train to act properly, owing to the charring of a leather washer on the piston of the tender-brake. He did not think, however, that the driver could have been keeping as good a look-out as he should have done, as he might have seen the junction distant-signal sooner than he did, in which case he would have applied the brake sooner, and have been able to stop his train short of the point of collision.

F.—*Collisions within fixed Signals at Stations or Sidings.*

Inquiries were held into 15 collisions in this class, which resulted in the death of 5 passengers and injury to 175 passengers and 11 servants.

The causes which led to these collisions may be summarised as follows:—

Mistakes or negligence of Companies' servants in 15 cases; foggy or stormy weather in 6 cases; excessive speed in 2 cases; insufficient or inadequately enforced regulations in 3 cases; defects of signals or locking apparatus in 3 cases; defective methods of working in 2 cases; failure of brake apparatus in 1 case; and foggy weather in 1 case.*

* *See* note to Summary on page 13.

In three cases attention was called to the long hours worked by the Company's servants.

BELFAST AND NORTHERN COUNTIES:

February 23rd.—While a passenger train from Londonderry to Belfast was standing at the platform at Castlerock station, it was run into at the rear by a ballast train. Two passengers and two Company's servants were injured.

This collision was produced by two principal causes; first by the station-master at Downhill allowing the ballast train to proceed before he had received any message from Castlerock as to the passenger train; and secondly by the passenger train not having been properly protected by signals at Castlerock. The driver of the passenger train was in fault for not crossing to the fireman's side of the footplate (the fireman being engaged in examining the water in the tank) when approaching the station.

The Inspecting Officer called attention to the hours of duty of the driver of the passenger train, viz., 17 hours on alternate days (Sundays excepted).

CALEDONIAN:

March 5th.—A light engine was let out of a siding on to the down main line at Larbert station, when a brake-van and two passenger carriages were standing at the down platform, and came into collision with the brake-van. One passenger was injured.

The Inspecting Officer found that the signalman was to blame for not taking proper steps to stop the light engine at his box after letting it out of the siding, but that the driver was most in fault, as he could not have failed to see the vehicles in front of him, had he been attending to his duty and kept a proper look out. The fireman, who was occupied with the fire, should have been looking out at this time, and he also was to blame.

GREAT EASTERN:

June 14th.—While a workmen's train from Walthamstow for Liverpool Street was standing on the up suburban line at Bishopsgate Street station it was run into in rear by a workmen's train from Enfield. Five passengers were killed and 52 passengers and 4 Company's servants were injured.

This collision was immediately caused (1) by the omission of the signalman in the Bishopsgate middle cabin to signal forward to the north cabin the train from Walthamstow; and (2) by the omission of the signalman in the north cabin to notice that a train was standing at the platform when the train from Enfield was signalled on to him, before accepting the signal.

The Inspecting Officer was of opinion that the collision might have been prevented but for the Company's practice of keeping the out-door signals (except at junctions) normally "off," instead of normally at danger, and suggested the expediency of altering the system under which the out-door signals are worked. He called attention to the want of light on the suburban line, but for which the driver of the Enfield train might have seen the tail of the Walthamstow train in time to have stopped before reaching it, adding that he had learnt that the station was shortly to be supplied with the electric light. He recommended that in the meantime up trains on the suburban line should be required to carry red tail lights during daylight as well as darkness; that a rail-contact should be fixed near the Bishopsgate north up home-signal to ring a bell in the signal cabin when a train is passing it; and that the rail contact, in advance of the up starting-signal should be used for keeping at danger the up home-signal until a train had passed the rail contact.

GREAT WESTERN:

May 12th.—As a down passenger train from Ashburton was approaching Buckfastleigh it ran into an up goods train, which was standing outside the down home signal. Two passengers complained of being shaken.

The Inspecting Officer considered that the responsibility for this accident vested on porter Bartlett who was at the time acting as station inspector, and who gave the "line clear" signal to Ashburton while the goods train was occupying the line outside the home signal.

November 14th.—A light engine overran the home-signal at Hatton station and came into collision with the rear of a passenger train. Three passengers complained of minor injuries.

The Inspecting Officer attributed this collision to carelessness on the part of the driver of the light engine, in approaching the station at too high a speed, and called attention to the unsatisfactory nature of the rules for block-working at this junction.

HIGHLAND:

October 14th.—After the engine and tender of a mixed train had been uncoupled for shunting purposes at Auchnashellach, the whole of the train ran back down an incline, and after coming to rest on a rising gradient, ran forward again towards Auchnashellach, coming into collision with the engine and tender which had run back to pick up the train. Eight passengers were injured, but none seriously.

The Inspecting Officer attributed this accident to want of thought on the part of the guard and driver of the train, who should have informed the station-master that the brake upon the rear van was out of order, so that he might not uncouple the train until its safety was assured by the application of all the brake power remaining available, and who, the guard especially, should have seen that this brake power was properly applied.

The correspondence which arose on this case as to the marshalling of mixed trains has been presented to Parliament. *See* [C.-6946.]

LANCASHIRE AND YORKSHIRE:

August 11th.—A passenger train from Preston for Liverpool came into collision with the rear of a passenger train from Wigan, which was standing at the platform at Sandhills. Sixteen passengers and one Company's servant were injured.

The Inspecting Officer considered that the responsibility for this accident must rest with the signalman in No. 1 cabin, who put up his starting signal before the Wigan train had left the station, and accepted the Preston train while the Wigan train was still at the platform.

The Inspecting Officer called attention to the signalling arrangements at this station, and recommended their reconsideration by the Company.

LANCASHIRE AND YORKSHIRE AND LONDON AND NORTH-WESTERN JOINT:

July 23rd.—A Lancashire and Yorkshire passenger train came into collision with the rear of a London and North-Western passenger train which was standing at the platform at Preston station. Eleven passengers and one Lancashire and Yorkshire Railway Company's servant were injured.

This accident was primarily caused by a mistake on the part of the signalman in Preston No. 2 cabin, who lowered the rear home signal for the Lancashire and Yorkshire train while it was still in motion a long distance from that signal, whereas it should have been stopped at the rear home signal and then admitted to the platform to draw up behind the London and North-Western train. The accident would not have occurred, however, had the driver exercised ordinary care when entering the station, and not overlooked the advanced home signal which was at danger, or failed to see the tail of the train in front in time to have stopped short of it.

The Inspecting Officer recommended the Companies concerned to take measures to have the rule as to absolute stopping at the rear home signal strictly enforced in future.

LONDON AND NORTH-WESTERN:

July 31st.—A special goods and cattle train from Holyhead ran into a special passenger train which was standing on the up-line at Penmaenmawr station. Seven passengers and three Company's servants were injured.

The Inspecting Officer considered that the blame for this collision must rest on the signalman, who lowered his signals and allowed the goods and cattle train to pass while the passenger train was occupying the up-line. He called attention to the short intervals of rest between two tours of duty in the cases of the driver and guard of the passenger train, and the long hours of duty of porter Evans, who, at the time of the collision, had been on duty for 16 hours with only two hours for meals.

MIDLAND:

January 27th.—A down passenger train came into collision with an empty mineral waggon near Humberstone station. Four passengers complained of being shaken.

This collision was the result of a previous collision which had occurred upon the goods sidings, and had thrown the waggon foul of the down main line just before the passenger train reached the spot.

The Inspecting Officer called attention to the hours of duty of a shunter, through whose carelessness the waggon was allowed to remain out on the main line, and who at the time of the accident had been on duty for 12 hours 22 minutes; and of four other Companies servants.

MIDLAND:

October 31st.—While a passenger train was standing at the up platform at Kentish Town station, it was run into in rear by an up express train. Ten passengers complained of minor injuries.

This collision was due to a breach of the block telegraph regulations. The signalmen at Kentish Town junction cabin allowed the first passenger train to enter Islip street section, in which the station is situated, without the knowledge of the signalman at Islip Street box, and then, forgetting that they had done so, allowed the express to run into the station, while the first train was still at the platform waiting for the signal to start.

NORTH UNION:

January 21st.—A Lancashire and Yorkshire Company's passenger train which was standing at the home-signal of the goods line cabin outside Preston station, was run into in rear by a London and North-Western Company's engine with a cattle truck attached. Six passengers complained of being shaken.

The Inspecting Officer considered that the blame for this collision must rest primarily on the signalman in No. 1 cabin, who gave a wrong signal to the driver of the London and North-Western engine. It was the duty of the driver, however, to have kept a good look-out ahead, and had he done so, instead of keeping his whole attention fixed on the signals, he would most probably have seen the tail lights of the passenger train in time to stop his engine.

SOUTH EASTERN:

February 22nd.—A London, Brighton, and South Coast Company's train when approaching Hastings station overran the home signals which were at danger, and came into collision with a South-Eastern Company's engine. Nine passengers were injured.

The immediate cause of this collision was want of care on the part of the driver of the London, Brighton, and South Coast train, who, failing to see the down distant signal in the tunnel between St. Leonards and Hastings, did not realise where he was until he came to the Hastings end of the tunnel. He was stated to be an experienced driver over this line, and it is hard to understand how he could have mistaken his position.

The Inspecting Officer called attention to the danger of shunting being allowed on the down line near the home signals when a train has been accepted from St. Leonards, and allowed to leave that station without any warning to the driver.

SOUTH EASTERN:

November 19th.—A London, Brighton, and South Coast Company's empty train, while crossing from the up main line to the up Croydon line at No. 4 cabin, London Bridge, was run into by a London, Brighton, and South Coast Company's workmen's train. Three passengers were injured.

This collision was due to the driver and fireman of the workmen's train mistaking the signal for the empty train for their own.

The Inspecting Officer did not consider that the arrangements at this spot were a proper system of block working, and recommended the introduction of safer means for working the traffic, and the provision of additional signal cabins.

WIRRAL AND MERSEY:

November 1st.—As a Wirral Company's train was standing at the main down platform at Park (Joint) station, Birkenhead, it was run into in rear by a light engine. Forty-one passengers complained of minor injuries to themselves or their clothing.

The Inspecting Officer attributed this collision to want of caution on the part of the driver of the light engine, who, in spite of the fog prevailing at the time, ran through the station at too high a speed. He suggested some improvements in the signalling arrangements inside this station.

G.—*Collisions between Engines or Trains meeting in opposite directions.*

No collision under this head formed the subject of inquiry.

H.—*Accidents or Collisions at Level Crossings of two Railways.*

No accident or collision under this head formed the subject of inquiry.

I.—*Accidents in consequence of Engines or Trains being wrongly turned into Sidings or otherwise through Facing-Points.*

Five accidents in this class, resulting in injury to 102 passengers and 13 servants, were inquired into.

Three were due to mistakes of signalmen in setting points; one was due to a misunderstanding between a signalman and a shunter; and one was due to failure of facing points apparatus. In two of the above cases attention was called to the hours worked by the Companies servants.

GREAT EASTERN:

August 21st.—As a passenger train from Ilford was approaching Leman Street station it was run into by a light engine belonging to the London, Tilbury, and Southend Railway Company, which was travelling in the wrong direction on the left-hand up line.

Fifty-six passengers, the guard of the train, and the drivers and firemen of both engines were injured.

This collision was due to the fact that the signalman in Fenchurch Street signal-box forgot that the cross-over road was set from the down to the up line, at the time he gave the signal to the light engine to go away.

The Inspecting Officer called attention to the hours of duty of the driver of the light engine, who travelled 540 yards before he discovered that he was on the wrong road, and who at the time of the accident had been on duty for 16 hours after a rest of 9 hours 40 minutes. He considered it desirable that lads of 16 years of age, with but little experience, should not be trained as firemen on the engines of passenger trains.

HULL, BARNSLEY, AND WEST RIDING:

May 27th.—A goods engine proceeding from Neptune Street goods yard to the locomotive shed at Springhead was allowed through a mistake to leave Neptune Street on the down line instead of the up line, and came into collision with another goods engine, which was standing on the down line at Springhead. Three Company's servants were injured.

The Inspecting Officer was of opinion that the responsibility for this collision rested between the driver of the light engine and the pointsman at Neptune Street; and considered, from what was stated in evidence, that some laxity existed in the working of the goods yard.

MIDLAND:

June 14th.—A passenger train from Bristol was by mistake turned on to the south instead of the north arrival line at Leeds station and came into collision with a light engine; four passengers and five Company's servants were injured.

The Inspecting Officer found that this collision was primarily caused by the mistake of the signalman. The driver of the passenger train was to blame for exceeding the limit of speed for running between Leeds junction and the station. The guard, who was well acquainted with the station, might have realised the mistake which had been made, and stopped the train with his continuous brake, had he kept a proper look-out for signals.

NORTH EASTERN:

March 1st.—A passenger train when entering Newcastle Central station took the wrong road and travelling along the goods line instead of along the passenger line came into collision with a goods engine; 35 passengers were slightly injured or shaken.

This collision was due to a failure in the connecting-rod between the facing-points on the passenger line and the lever in the cabin which worked these points.

NORTH STAFFORDSHIRE:

July 27th.—An engine and tender were by a misunderstanding, crossed, from the down main line to the down branch line, instead of on to the up main line, at Uttoxeter station, and came into collision with a loaded passenger carriage. Seven passengers were injured.

This collision was due to a misunderstanding between the signalmen and the shunter, and the Inspecting Officer considered that the latter was responsible for not giving his instructions in a clearer manner.

The Inspecting Officer was of opinion that there was a want of care and method in carrying out the shunting at this station; and that a certain amount of fly-shunting of loaded passenger vehicles, which is a dangerous and objectionable practice, took place.

He called attention to the hours of duty of the engine-driver, viz., 13½ hours with intervals of 1 and 2 hours.

J.—*Accidents on Inclines.*

K.—*Trains on Fire.*

No accidents under these heads were inquired into.

L.—*Miscellaneous.*

One accident in this class, resulting in injury to 4 passengers, was inquired into.

NORTH BRITISH:

August 6th.—The carriages of a passenger train which had been pushed out from the platform line at Kilsyth old station, so that the engine might run round the train, were fly-shunted back, and came into collision with the buffer-stop. Four passengers who had already got into the train were slightly injured.

The Inspecting Officer was of opinion that the whole of the shunting operations were performed in a hurried and slovenly manner, and would not have occurred if any of the men concerned had been as smart as they should have been; but that their fault must be attributed to their anxiety to get the train, which was already late, ready to start. He suggested that measures should be taken by the Company to prevent the dangerous practice of fly-shunting. He called attention to the hours of duty of the station-master, who had already been on duty 15 hours, and had two stations to attend to.

The following is a SUMMARY of the circumstances which contributed to the accidents in the year 1892 in comparison with the ten preceding years.

Circumstances which contributed to the Accidents or Collisions.*	Nos. of Cases.										
	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.
Fracture or unloosening of couplings	4	2	1	—	2	—	—	1	—	—	—
Defective maintenance of rolling-stock	1	2	4	1	5	1	5	6	6	5	—
Defective maintenance of road or works	4	8	10	2	—	5	6	8	6	5	5
Defective construction of rolling-stock	8	6	2	—	2	1	1	2	1	3	1
Defective construction of road or works	6	5	13	7	1	4	5	6	2	2	2
Insufficient or defective accommodation for the requirements of the traffic	4	10	4	1	—	1	2	2	—	3	—
Insufficient establishment, long hours, or inexperienced servants	—	—	—	1	—	3	4	7	5	5	9
Inadequate or unsuitable brake power	22	27	27	13	16	14	4	7	3	12	3
Defective arrangement of signals or points, or want of or defective locking-apparatus, or want of safety-points or locking-bars or bolts	15	10	5	8	3	11	9	8	6	7	4
Insufficient or inadequately enforced regulations	10	7	—	1	—	1	2	—	9	14	14
Defective system for securing intervals between trains, or want of telegraph-communication or of block-system	12	13	10	3	7	4	8	7	9	8	6
Negligence, want of care, or mistakes of officers or servants	91	81	70	41	50	45	45	51	42	61	38
Excessive speed, having regard to engine, road, or other circumstances	22	30	25	7	4	7	5	8	8	16	9
Foggy or stormy weather, or snowstorms	11	11	1	2	6	7	6	1	11	12	2
Totals	210	212	172	88	96	104	102	113	111	153	93

* The above summary of the circumstances which were the cause of or contributed to the accidents and collisions inquired into for the years 1882 to 1892 shows an excess over the number of the accidents and collisions, inasmuch as a large number of these arose from more than one circumstance.

It appears that of the 48 investigated train accidents, the largest number occurred on the following railways; viz.:—

	Length of Railway. Miles at Dec. 1892.	Train Mileage.
6 on the Great Eastern	1,103	18,096,106
6 on the Midland	1,383	41,476,937
5 on the North-Eastern	1,612	25,910,462
4 on the Great Western	2,481	36,848,911
4 on the South-Eastern	401	7,811,471
3 on the London and North-Western	1,888	43,236,699
3 on the North British	1,097	15,577,646
2 on the Lancashire and Yorkshire	523	16,209,035
2 on the London and South-Western	850	13,494,132

Of the remaining 13 accidents not more than one occurred on any one railway.

In connection with this table it should, however, be noticed that accidents taking place upon any railway may occur to trains belonging to other Companies, and may not be caused by any fault of the Company owning the line.

Accidents generally to Servants of Railway Companies.*

Nineteen railway servants were killed and 305 injured whilst employed in coupling and uncoupling of vehicles; 139 were killed and 1,336 injured whilst employed in various other shunting operations; 10 were killed and 48 injured by being caught between vehicles; 12 were killed and 53 injured by falling between trains and platforms; 63 were killed and 100 injured whilst working on the permanent way and sidings; and 170 were killed and 227 injured whilst walking, crossing, or standing on the line on duty.

The following is a comparative statement relating to the number of railway servants killed and injured whilst employed in shunting operations, including the coupling and uncoupling of vehicles, for the years 1883 to 1892 inclusive, during which period of ten years more than miles of additional railway have been opened, and the number of railway servants employed has largely increased.

Year.	In Coupling and Uncoupling operations only.		In all shunting operations *including* Coupling and Uncoupling Vehicles.	
	Killed.	Injured.	Killed.	Injured.
1883	45	395	130	1,449
1884	29	341	91	1,320
1885	36	267	138	1,236
1886	23	301	119	1,168
1887	26	232	115	1,152
1888	15	258	99	1,261
1889	19	295	127	1,521
1890	16	324	129	1,648
1891	24	267	160	1,671
1892	19	305	158	1,641

In the table following will be found the number of servants of railway companies killed and injured by train accidents and whilst engaged in their several occupations in the respective years 1874 to 1892, and the proportion of the whole number killed and of the whole number injured to the total number employed, calculated upon the

* The Returns made by the Railway Companies show that 74 persons were killed and 5,991 injured whilst on the premises or employed in the workshops or warehouses or in loading goods in the goods yards, of whom 41 killed and 5,510 injured were servants of Companies or contractors. As, however, these casualties cannot properly be considered to have occurred in the course of working the railways, the figures have not been here taken into consideration

numbers employed given in the returns presented to Parliament for the years 1874, 1884, and 1889.

Year.	By Train Accidents.		By Accidents on Railways, exclusive of Train Accidents.		Proportion of Accidents occurring to Servants of Companies by Train and other Accidents to the whole number employed, on the assumption mentioned below.*		Total Numbers employed. The Figures in Italics are Estimated.
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	
1874 -	46	271	742	2,544	1 in 320	1 in 89	250,000
1875 -	21	239	744	3,379	*1 in 334*	*1 in 70*	*255,000*
1876 -	28	236	645	2,364	*1 in 386*	*1 in 100*	*260,000*
1877 -	22	154	620	2,009	*1 in 414*	*1 in 123*	*265,000*
1878 -	15	156	529	1,847	*1 in 500*	*1 in 135*	*270,000*
1879 -	8	118	444	1,836	*1 in 619*	*1 in 143*	*280,000*
1880 -	23	118	523	1,962	*1 in 531*	*1 in 139*	*290,000*
1881 -	19	168	502	2,278	*1 in 576*	*1 in 123*	*300,000*
1882 -	21	153	532	2,423	*1 in 570*	*1 in 122*	*315,000*
1883 -	11	87	543	2,373	*1 in 596*	*1 in 134*	*330,000*
1884 -	23	115	523	2,204	1 in 634	1 in 149	346,426
1885 -	13	81	438	2,036	*1 in 768*	*1 in 163*	*346,426*
1886 -	4	81	421	1,929	*1 in 815*	*1 in 172*	*346,426*
1887 -	8	109	414	1,966	*1 in 821*	*1 in 167*	*346,426*
1888 -	7	93	389	2,100	*1 in 874*	*1 in 157*	*346,426*
1889 -	4	117	431	2,652	1 in 877	1 in 138	381,626
1890 -	12	147	487	2,975	*1 in 765*	*1 in 122*	*381,626*
1891 -	12	154	537	3,007	*1 in 695*	*1 in 121*	*381,626*
1892 -	9	92	525	2,823	*1 in 714*	*1 in 130*	*381,626*

Note.—These figures include accidents to contractors' servants, of whom 19 were killed and 20 injured during the year 1892.

* The numbers employed are known accurately only for the years 1874, 1884, and 1889. The figures printed in *italics* are estimated for the years 1875 to 1883 and 1885 to 1888. Those for the years since 1889 are calculated upon the numbers given in that year. The number of contractors' servants cannot be estimated.

The following table shows the number of men employed by the companies in various occupations and the number of fatal accidents and injuries to each class.

Class of Servants.	Number employed.†	Number killed and injured during the Year 1892.		Proportion to the Number employed.	
		Killed.	Injured.	Killed.	Injured.
Station-masters - - - -	6,953	4	7	1 in 1,738	1 in 993
Brakesmen and goods-guards - -	10,038	45	467	1 in 223	1 in 21
Permanent-way men - - -	54,273	109	131	1 in 497	1 in 414
Gatekeepers - - - -	3,070	7	4	1 in 438	1 in 767
Engine-drivers - - - -	15,180	33	327	1 in 460	1 in 46
Porters - - - - -	38,808	75	397	1 in 517	1 in 97
Shunters - - - - -	5,922	36	359	1 in 164	1 in 16
Firemen - - - - -	14,804	20	421	1 in 740	1 in 35
Inspectors - - - -	5,226	8	25	1 in 653	1 in 209
Guards, passenger - - -	5,033	8	84	1 in 629	1 in 59
Pointsmen and signalmen - -	21,153	13	32	1 in 1,627	1 in 661
Labourers - - - -	28,904	47	116	1 in 614	1 in 249
Ticket collectors, &c. - - -	2,410	1	5	1 in 2,410	1 in 482
Mechanics - - - -	64,802	18	35	1 in 3,600	1 in 1,851
Other classes - - - -	109,050	110	505	1 in 991	1 in 215
Total - - - - -	381,626	534	2,915	1 in 714	1 in 130

† These figures are taken from a Return which shows the number of men employed on the 31st December 1889.

Accidents to Persons other than Passengers or Servants of Railway Companies.

The accidents to persons passing over railways at level crossings show a slight increase on the figures for the previous year, the numbers being 77 killed and 21 injured, against 66 killed and 31 injured in 1891. The number of trespassers was 258 killed and 121 injured, against 306 killed and 161 injured in 1891, or a decrease of 48 killed and 40 injured. The number of suicides was 89, against 87 in 1891.

Absolute Block and Interlocking Systems.

The amount of progress that has been made in the adoption of these systems is stated in the Returns annually presented to Parliament.

The proportion in which the signal and point levers had been interlocked on railways was 98 per cent. in England, 93 per cent. in Scotland, 90 per cent. in Ireland, and 93 per cent. for the United Kingdom.

The following table shows the length of double and single line in the United Kingdom open for passenger traffic on the 31st December 1892, and the length of such lines worked upon the various systems.

	Line open for Passenger Traffic.		Worked on Absolute Block System.				Worked on other Telegraph Systems.		Single Lines worked under		
				Single Line.							
	Double.	Single.	Double Line.	With Train Staff System.	Without Train Staff System.	Electrical Train Staff or Tablet System.	Double Line.	Single Line.	Single Engine System.	Train Porter System.	Train Staff System.
	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.
England and Wales	9,167	4,345	9,103	2,890	42	1,020	58	29	213	1	151
Scotland - -	1,267	1,659	1,265	175	284	480	1	4	423	1	290
Ireland - -	609	2,241	585	504	—	995	22	18	185	—	538
United Kingdom -	11,043	8,245	10,953	3,569	326	2,495	81	51	821	2	979

Level Crossings.

In most of the cases of level crossings which were brought to the notice of this Department by the occurrence of accidents or the complaints of local authorities and individuals the Board of Trade had no statutory power to compel provision to be made for the public safety, but in many instances the railway companies concerned have been communicated with and satisfactory arrangements, usually necessitating the construction of a footbridge or subway, have in several instances been made.

Continuous Brakes.

The continuous brakes return laid before Parliament for the half-year ended 31st December 1892 shows that the number of vehicles fitted with brakes complying with some or all of the conditions laid down in the circular of this Department amounted, at that date, to 90 per cent. of the number in use, and that the number of vehicles fitted with pipes and connections only amounted to 7 per cent.

Orders in regard to the adoption of continuous brakes have been made on the railway companies that will have effect as regards the amount of brake power available.

General Remarks.

Railway accidents are dealt with in this Report mainly from two points of view, (1) the safety of the travelling public, and (2) the safety of the men employed in working the traffic.

Accidents to passengers arising from causes often within their own control show an increase of nearly 10 per cent. in the number of killed, and a slight decrease in the number of injured.

As regards train accidents the number of passengers killed during the year shows a rather large increase on that of the preceding year; this is caused by three serious accidents on the Great Eastern Railway at Bishopsgate, on the Midland Railway at Esholt Junction, and on the North-Eastern Railway near Thirsk, in which altogether 19 passengers were killed.

The actual number of accidents to trains, however, shows a notable decrease during the year; those in which official inquiries were ordered by the Board of Trade being far below the average number of previous years. The number of cases of collisions with buffer-stops, or with vehicles standing close to the stops, due to trains entering stations at too high a speed, which had recently been increasing, shows a decrease on that of last year.

The Board of Trade have continued to urge upon the railway companies the recommendation of their Inspecting Officers that the use of continuous brakes on trains when entering terminal stations should be forbidden, except in cases of emergency; and correspondence on this subject is still proceeding with the Associated Companies.

In connection with the two serious collisions at Derby Junction on the London and North-Western Railway, and at Esholt Junction on the Midland Railway, in both of which cases trains were allowed to approach simultaneously upon converging lines, the Board of Trade have communicated with the Associated railway companies as to their mode of working at junctions and as to securing a more uniform system of signalling trains; and there is reason to hope that alterations may be introduced to prevent the recurrence of accidents arising from this cause.

Two cases of the failure of communication cords on passenger trains occurred during the year. Both were cases of fatal accidents to passengers who fell out of the railway carriages in which they were travelling, and in each case the cord was pulled by a fellow passenger, and failed to act.

In the first case, which occurred on the Great Western Railway, the failure was attributed by the company to the fact that at the time the cord was pulled the train was passing round a curve, and the cord, being on the inner side, slackened to such a degree as to render it, at the moment, useless.

In the second case, on the Midland Railway, the cord was tested by the company's officials, both before and after the accident, and found to act properly, and they attributed the failure to the circumstance that the passenger who attempted to use it did not pull the cord properly, owing to the excitement and agitation of the moment.

Further correspondence has taken place with the railway companies on the subject of the employment in excursion trains of inside handles, especially those handles which open the doors of carriages when a downward pressure is applied; these have proved to be a source of danger to children, and measures have been taken by some of the companies to avoid such a danger as far as possible.

In the case of the serious accident that occurred on Easter Monday, at Hampstead Heath station, when several persons were killed in a crush on a staircase, measures have now been taken by the railway company, by the provision of additional means of access to the platforms, to prevent the recurrence of so deplorable a disaster; and in that in which a passenger was injured when leaning out of a railway carriage window at the entrance to Shakespeare tunnel, alterations have been made in the curves of the lines and the pier at the entrance to the tunnel to provide a remedy for the defect in construction which existed.

In other cases the requirements and suggestions of the Inspecting Officers have been pressed upon the railway companies with favourable results.

Casualties to railway servants, both from train accidents and other causes, show a satisfactory decrease. In those resulting from train accidents the number of killed shows a decrease of 25 per cent., and the number of injured a decrease of 40 per cent.; and in those resulting from other causes the number of killed shows a decrease of over 2 per cent., and the number of injured a decrease of over 6 per cent. The accidents resulting from shunting operations also show a slight decrease.

Railway Department, Board of Trade,
September, 1893.

COURTENAY BOYLE.

APPENDIX No. 1.

ABSTRACT of the ACCIDENTS which have been reported upon by the Inspecting Officers of the Department during the year 1892.—Classified according to the Class of each Accident, and the Causes to which it may be attributed.

CLASS OF ACCIDENT AND NAME OF RAILWAY.	Number of Accidents.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.																		
		Passengers and others.		Servants of Company.		Attributable to the Rolling Stock or the Works.					Attributable to the Management.													
		Killed.	Injured.	Killed.	Injured.	Fracture or unloosening of Couplings.	Defective Maintenance of Machinery of Train.	Defective Maintenance of Road or Works.	Defective Construction of Machinery of Train.	Defective Construction of Road or Works.	Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Brake Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking Apparatus, or Want of Safety Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph Communication, or of Block Telegraph System.	Negligence, Want of Care or Mistake of Officers and Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather, or Snow.	Improper Interference by Persons not under the Control of the Company.
CLASS OF ACCIDENT.																								
A.—Accidents from Engines or Vehicles meeting with or leaving the Rails in consequence of Obstructions or of Defects in connection with the Permanent-way or Works	6	1	6	3	5	–	–	3	–	–	–	–	–	–	1	–	1	–	2	1	–	–
B.—Accidents from Boiler-explosions, or from Failures of Axles, Wheels, or Tyres, or from other defects in rolling-stock	4	–	37	2	2	–	–	1	–	2	–	1	–	–	–	–	1	–	–	–	–	–
C.—Accidents from Trains entering Stations at too great Speed	10	–	88	–	3	–	–	–	1	–	–	–	1	–	–	–	4	–	9	5	–	–
D.—Collisions between Engines and Trains following one another on the same Line of Rails, excepting at Junctions, Stations, or Sidings	2	9	40	1	6	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–
E.—Collisions at Junctions	5	6	100	2	9	–	–	1	–	–	–	–	1	–	–	–	3	–	–	–	1	–
F.—Collisions at Stations or Sidings	15	5	175	–	11	–	–	–	–	–	–	3	1	–	2	–	3	3	15	2	1	–
G.—Collisions between Engines or Trains meeting in opposite Directions	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H.—Collisions at Level-Crossings of two Railways	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
I.—Accidents in consequence of Engines or Trains being wrongly turned into Sidings or otherwise through Facing-Points	5	–	102	–	13	–	–	–	–	–	–	2	–	–	1	–	1	–	4	1	–	–
J.—Accidents on Inclines	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K.—Trains on Fire	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
L.—Miscellaneous	1	–	1	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	1	–	–	–
TOTAL	48	21	552	8	49	–	–	5	1	2	–	9	3	–	4	–	14	6	38	9	2	–
NAME OF RAILWAY.																								
Belfast and Northern Counties	1	–	2	–	2	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–
Caledonian	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–
Glasgow and South-Western	1	–	7	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	1	–	–
Great Eastern	6	5	158	1	11	–	–	–	–	–	–	2	–	–	2	–	4	–	5	2	–	–
Great Northern and London and North-Western	1	1	3	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Hull, Barnsley, and West Riding	1	–	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Great Western	4	–	13	1	2	–	–	–	1	–	–	–	1	–	–	–	1	1	2	1	–	–
Highland	1	–	8	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	1	–	–	–
Lancashire and Yorkshire	2	–	16	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	2	–	1	–
Lancashire and Yorkshire and London and North-Western	1	–	11	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–
London and North-Western	3	1	75	1	6	–	–	1	–	–	–	1	–	–	–	–	1	1	2	–	–	–
London and South-Western	2	–	11	1	2	–	–	–	–	–	–	–	–	–	–	–	1	1	2	1	–	–
London, Chatham, and Dover	1	–	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Metropolitan	1	–	5	–	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Midland	6	5	48	–	12	–	–	–	–	–	–	2	–	–	–	–	1	1	3	2	–	–
North British	3	–	5	–	3	–	–	2	–	–	–	1	1	–	–	–	1	–	2	–	–	–
North-Eastern	5	9	94	1	4	–	–	–	–	–	–	1	–	–	1	–	1	–	1	1	–	–
North Staffordshire	1	–	7	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	1	–	–	–
North Union	1	–	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
South-Eastern	4	–	32	1	1	–	–	–	–	–	–	–	–	–	–	–	1	1	2	–	–	–
Weymouth and Portland	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Wirral and Mersey	1	–	41	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	1	1	–
TOTAL OF THE ABOVE RAILWAYS	48	21	552	8	49	–	–	5	1	2	–	9	3	–	4	–	14	6	38	9	2	–

APPENDIX No. 2.

LIST of the ACCIDENTS which have been reported upon by the Inspecting Officers of the Department during the year 1892.—Classified according to the Nature of each Accident, and the Causes to which it may be attributed

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.																	
					Attributable to the Rolling Stock or the Works.					Attributable to the Management.												
						Defective Maintenance of		Defective Construction of														
	Passengers and others.		Servants of Company only.		Fracture or unloosening of Couplings.	Machinery of Train.	Road or Works.	Machinery of Train.	Road or Works.	Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Brake Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking Apparatus, or Want of Safety Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph Communication, or of Block Telegraph System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather.	Improper Interference by Persons not under the Control of the Company.	
	Killed.	Injured.	Killed.	Injured.																		
A.—*Accidents from Engines or Vehicles meeting with or leaving the Rails in consequence of Obstructions or of Defects in connection with the Permanent-Way or Works.*																						
GREAT EASTERN: September 7th.—Passenger train partly left rails at Haughley Junction	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	1	–	–	
GREAT NORTHERN AND LONDON AND NORTH-WESTERN: July 25th.—Passenger train left rails near Melton Mowbray	1	3	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	
GREAT WESTERN: September 12th.—Part of ballast train left rails in cutting between Devonport and Saltash	–	–	1	2	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	
LONDON AND NORTH-WESTERN: January 21st.—Passenger train left rails between Stanbridgefor and Leighton	–	2	–	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
NORTH BRITISH: August 31st.—A passenger train left the rails near Balfron	–	1	–	2	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
WEYMOUTH AND PORTLAND: November 6th.—Passenger train partly left rails on the Backwater Viaduct, Weymouth	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Total	1	6	3	5	–	–	3	–	–	–	–	–	–	1	–	1	–	2	1	–	–	
B.—*Accidents from Boiler-Explosions, Failures of Axles, Wheels, or Tyres, or from other Defects in the Rolling Stock.*																						
GREAT EASTERN: August 1st.—The engine of a passenger train left the rails at Stepney Junction, and was run into by another passenger train	–	12	1	1	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	–	
METROPOLITAN: January 5th.—A carriage of a passenger train left the rails near King's Cross	–	5	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
SOUTH-EASTERN: January 7th.—A passenger train partly left the rails when passing round the curve near Borough Market signal box	–	19	1	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	
January 18th.—Another passenger train partly left the rails at the same spot	–	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	
TOTAL	–	37	2	2	–	–	1	–	2	–	1	–	–	–	–	1	–	–	–	–	–	

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.																				
					Attributable to the Rolling Stock or the Works.					Attributable to the Management.															
	Passengers and others.		Servants of Company only.		Fracture or unloosening of Couplings.	Defective Maintenance of		Defective Construction of		Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Brake Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking Apparatus, or Want of Safety Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph Communication, or of Block Telegraph System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather.	Improper Interference by Persons not under the Control of the Company.		
	Killed.	Injured.	Killed.	Injured.		Machinery of Train.	Road or Works.	Machinery of Train.	Road or Works.																
C.—*Accidents from Trains entering Stations at too great a Speed.*																									
GLASGOW AND SOUTH-WESTERN:																									
November 30th.—Passenger train came into collision with buffer-stops at St. Enoch station	–	7	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	1	–	–				
GREAT EASTERN:																									
July 18.—Passenger train ran into buffer-stops at Forest Gate station		30	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	1	1	–	–				
October 16th.—Passenger train came into collision with buffer-stops at Forest Gate station	–	8	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–				
GREAT WESTERN:																									
January 13th.—Passenger train came into collision with buffer-stops at Cirencester station	–	8	–	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	–	–				
LONDON AND SOUTH-WESTERN:																									
May 26th.—Passenger train came into collision with a bogie-carriage standing at the buffer-stops at Southampton station	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–				
LONDON, CHATHAM, AND DOVER:																									
June 30th.—Passenger train came into collision with the buffer-stops at Sheerness Dockyard station	–	9	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–				
POLAND:																									
January 19th.—Passenger train came into collision with buffer-stops at Nailsworth station	–	3	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–				
NORTH-EASTERN:																									
January 16th.—Passenger train was backed against the buffer-stops at Durham station	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–				
February 19th.—Passenger train came into collision with buffer-stops at West Hartlepool station	–	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–				
September 22nd.—Passenger train came into collision with buffer-stops at Newcastle Central station	–	11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–				
Total	–	88	–	3	–	–	–	1	–	–	–	1	–	–	–	4	–	9	5	–	–				
D.—*Collisions between Engines and Trains following one another on the same Line of Rails, excepting at Junctions, Stations, or Sidings.*																									
POLAND:																									
December 8th.—Collision between goods trains near Childs Hill	–	1	–	2	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–				
NORTH-EASTERN:																									
November 2nd—Collision between passenger train and goods train near Thirsk	9	39	1	4	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–				
TOTAL	9	40	1	6	–	–	–	–	–	–	2	–	–	–	–	–	–	2	–	–	–				

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.																		
					Attributable to the Rolling Stock or the Works.					Attributable to the Management.													
	Passengers and others.		Servants of Company only.		Fracture or unloosening of Couplings.	Defective Maintenance of		Defective Construction of		Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment; inexperienced Servants, or too long Hours of Duty.	Insufficient Brake Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking Apparatus, or Want of Safety Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph Communication, or of Block Telegraph System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather.	Improper Interference by Persons not under
	Killed.	Injured.	Killed.	Injured.		Machinery of Train.	Road or Works.	Machinery of Train.	Road or Works.														
E.—*Collisions at Junctions.*																							
LANCASHIRE AND YORKSHIRE: December 8th.—Collision between a passenger train and a goods train at Philips Park junction	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1				
LONDON AND NORTH-WESTERN: May 27th.—Collision between two passenger trains at Derby junction	1	66	1	2	–	–	–	–	–	–	–	–	–	–	1	1	1	–	–				
LONDON AND SOUTH-WESTERN: August 20th.—Collision between passenger train and empty carriage train near Clapham junction	–	8	1	2	–	–	–	–	–	–	–	–	–	–	1	1	1	–	–				
MIDLAND: June 9th.—Collision between two passenger trains at Esholt junction	5	26	–	4	–	–	–	–	–	–	–	–	–	–	1	1	1	–	–				
NORTH BRITISH: December 26th.—Collision between passenger train and goods train at Polmont junction	–	–	–	1	–	–	1	–	–	–	–	1	–	–	–	–	1	–	–				
TOTAL	6	100	2	9	–	–	1	–	–	–	–	1	–	–	–	3	3	5	–	1			
F.—*Collisions within Fixed Signals at Stations or Sidings.*																							
BELFAST AND NORTHERN COUNTIES: February 23rd.—Collision between a ballast train and a passenger train at Castlerock	–	2	–	2	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–				
CALEDONIAN: March 5th.—Collision between a light engine and a brake van with two carriages attached at Larbert	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–				
GREAT EASTERN: June 14th.—Collision between two workmen's train at Bishopsgate	5	52	–	4	–	–	–	–	–	–	–	–	–	1	–	1	–	1	–	–			
GREAT WESTERN: May 12th.—Collision between a passenger train and a goods train at Buckfastleigh	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–				
November 14th.—Collision between a light engine and a passenger train at Hatton	–	3	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	1	–				
HIGHLAND: October 14th.—Collision between a light engine and passenger carriages at Auchnashellach	–	8	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–				
LANCASHIRE AND YORKSHIRE: August 11th.—Collision between two passenger trains at Sandhills	–	16	–	1	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–				
LANCASHIRE AND YORKSHIRE AND LONDON AND NORTH-WESTERN JOINT: July 23rd.—Collision between two passenger trains at Preston	–	11	–	1	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–				
LONDON AND NORTH-WESTERN: July 31st.—Collision between a goods and cattle train and a passenger train at Penmaenmawr	–	7	–	3	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–				

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.																		
					Attributable to the Rolling Stock or the Works.					Attributable to the Management.													
	Passengers and others.		Servants of Company only.		Fracture or unloosening of Couplings.	Defective Maintenance of		Defective Construction of		Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Brake Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking Apparatus, or Want of Safety Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph Communication, or of Block Telegraph System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather.	Improper Interference by Persons not under the Control of the Company.	
	Killed.	Injured.	Killed.	Injured.		Machinery of Train.	Road or Works.	Machinery of Train.	Road or Works.														

F.—*Collisions within Fixed Signals at Stations or Sidings*—continued.

AND:																							
nuary 27th.—Collision between a passenger train and a waggon at Humberston	–	4	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–		
tober 31st.—Collision between two passenger trains at Kentish Town	–	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–		
H UNION:																							
nuary 21st.—Collision between an engine with cattle truck attached and a passenger train at Preston	–	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–		
H-EASTERN:																							
bruary 22nd.—Collision between a passenger train and a light engine at Hast-	–	9	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–		
ovember 19th.—Collision between two passenger trains at London Bridge	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–		
RAL AND MERSEY:																							
ovember 1st.—Collision between a light engine and a passenger train at Birkenhead	–	41	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	1	1	–		
TOTAL	5	175	–	11	–	–	–	–	–	–	3	1	–	3	–	3	2	15	2	1	–		

G.—*Collisions between Engines or Trains meeting in opposite Directions.*

No collisions occurred under this head.

H.—*Collisions at Level-Crossings of two Railways.*

No collisions occurred under this head.

I.—*Accidents in consequence of Engines or Trains being wrongly turned into Sidings or otherwise through Facing-Points.*

AT EASTERN:																							
ugust 21st.—Collision between a light engine and a passenger train at Leman Street	–	56	–	5	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–		
L, BARNSLEY, AND WEST RIDING:																							
lay 27th.—Collision between two goods engines at Springhead	–	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–		
LAND:																							
une 14th.—Collision between a passenger train and a light engine at Leeds.	–	4	–	5	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–		
TH-EASTERN:																							
larch 1st.—Collision between a passenger train and a goods engine at Newcastle	–	35	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–		
TH STAFFORDSHIRE:																							
uly 27th.—Collision between a light engine and a passenger train at Uttoxeter.	–	7	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	1	–	–	–		
TOTAL	–	102	–	13	–	–	–	–	–	–	2	–	–	1	–	1	–	4	1	–	–		

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.																	
					Attributable to the Rolling Stock or the Works.					Attributable to the Management.												
	Passengers and others.		Servants of Company only.		Fracture or unloosening of Couplings.	Defective Maintenance of		Defective Construction of		Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Brake Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking Apparatus, or Want of Safety Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph Communication, or of Block Telegraph System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather.	
	Killed.	Injured.	Killed.	Injured.		Machinery of Train.	Road or Works.	Machinery of Train.	Road or Works.													
J.—*Accidents on Inclines.*																						
No accidents occurred under this head.																						
K.—*Trains on Fire.*																						
No accidents occurred under this head.																						
L.—*Miscellaneous.*																						
North British:																						
August 6th.—Collision between the carriages of a passenger train and the buffer-stop at Kilsyth old station.	–	4	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	1	–	–	–	
Total - -	–	4	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	1	–	–	–	

RETURNS

OF

ACCIDENTS AND CASUALTIES

AS REPORTED TO THE BOARD OF TRADE BY THE SEVERAL RAILWAY COMPANIES IN THE UNITED KINGDOM,

During the Year ending 31st December 1892,

In pursuance of the Regulation of Railways Act (1871), 34 & 35 Vict. cap. 78;

TOGETHER WITH

REPORTS OF THE INSPECTING OFFICERS OF THE RAILWAY DEPARTMENT TO THE BOARD OF TRADE

UPON

CERTAIN ACCIDENTS

Which were inquired into.

Presented to both Houses of Parliament by Command of Her Majesty.

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1893.

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TABLE OF CONTENTS.

Page

SUMMARY of ACCIDENTS and CASUALTIES reported to the BOARD of TRADE during the Year ending 31st December 1892 - - - - - - - 3

TABLES:

No. 1. General Total.—Number of Persons reported as killed or injured on the Railways of the United Kingdom, distinguishing between Passengers, Servants of the Companies or of Contractors, and other Persons; and distinguishing also in the case of the two former Classes between Accidents caused by accidents to trains, rolling-stock, permanent-way, &c., and Accidents happening otherwise - - - - - - - - - 7

No. 2. Number of Persons reported as killed or injured in the United Kingdom, by the travelling of trains or the movement of vehicles used exclusively upon Railways, distinguishing between Passengers, Servants of Railway Companies, and other Persons; and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury - 8

No. 3. Accidents to Trains, Rolling-Stock, Permanent-Way, &c. on the Railways in the United Kingdom, distinguishing the different Classes of Accidents, and the Number of Passengers and others, and of Servants of Railway Companies, killed or injured in each Class of Accident - 9

No. 4. Accidents to Trains, Rolling-Stock, Permanent-Way, &c. on the Railways in the United Kingdom, distinguishing the different Classes of Accidents, the different Railways on which the same have occurred, and the Number of Passengers and others, and of Servants of Railway Companies, killed or injured on each Railway by those Accidents - - - 10

No. 5. Number of Servants of Railway Companies and Contractors reported as killed or injured on the Railways in the United Kingdom, by the travelling of trains or the movement of vehicles used exclusively upon Railways, distinguishing the Number which have occurred on each Railway or System of Railway, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury - - - - 14

No. 6. Table showing the different occupations of Servants of Railway Companies and Contractors who were killed or injured, and classifying their injuries as far as practicable - 18

No. 7. Number of Persons reported as having been killed or injured whilst upon the Companies' premises, by accidents in which the movement of vehicles used exclusively upon Railways was not concerned, distinguishing between Passengers, Servants of Companies, and other Persons; and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury - - - - - - - - 19

REPORTS ON ACCIDENTS INQUIRED INTO - - - - - - 21

Summary of Accidents and Casualties which have been reported to the Board of Trade as having occurred upon the Railways in the United Kingdom during the Year ending 31st December 1892.

I.—Accidents to Trains, Rolling-Stock, Permanent-Way, &c.

Accidents to trains, rolling-stock, permanent-way, &c. caused the death of 30 persons, and injury to 693, viz. :—

——	Killed.	Injured.	*Total for the corresponding Period in 1891.*	
			Killed.	*Injured.*
Passengers - - - - - -	21	601	*5*	*875*
Servants of companies - - - - -	9	92	*12*	*154*
Total - - - -	30	693	*17*	*1,029*

During the year there were reported 28 collisions between passenger trains or parts of passenger trains, by which 11 passengers and 2 servants were killed and 226 passengers and 19 servants were injured; 43 collisions between passenger trains and goods or mineral trains, &c., by which 9 passengers and 1 servant were killed and 193 passengers and 24 servants injured; 13 collisions between goods trains or parts of goods trains, by which 1 passenger and 16 servants were injured; 35 cases of passenger trains or parts of passenger trains leaving the rails, by which 1 passenger and 4 servants were killed, and 45 passengers and 9 servants were injured; 11 cases of goods trains leaving the rails, by which 1 servant was killed and 3 were injured; 8 cases of trains or engines travelling in the wrong direction through points, by which 45 passengers and 7 servants were injured; 18 cases of trains running into stations or sidings at too high a speed, by which 85 passengers and 5 servants were injured; 3 cases of the bursting of boilers or tubes, &c. of engines, by which 3 servants were injured; 4 cases of the failure of machinery, springs, &c., of engines, by which 2 servants were injured; 257 failures of axles, by which 1 passenger was injured; 11 failures of couplings, by which 1 servant was killed, and 2 passengers and 3 servants were injured; and 6 other accidents, by which 3 passengers and 1 servant were injured.

The following cases were also reported, but they involved no personal injury:—168 cases of trains running over cattle,* &c., or other obstructions on the line; 38 cases of trains running through gates at level crossings; 523 failures of tyres; 1 failure of a wheel; 4 cases of the failure of bridges; 272 failures of rails; 10 cases of flooding of portions of the permanent-way; 9 slips in cuttings or embankments; 6 cases of fires in trains; and 14 cases of fires at stations.

Of the 523 tyres which failed, 20 were engine-tyres, 11 were tender-tyres, 2 were carriage-tyres, 13 were van-tyres, and 477 were waggon-tyres; of the waggons, 392 belonged to owners other than the Railway Companies; 426 tyres were made of iron, and 95 of steel, and in 2 cases the material was not stated; 6 of the tyres were fastened to their wheels by Mansell's patent method, 8 by Gibson's patent method; 1 by Beattie's patent method, which left the wheel when it failed; 429 by bolts or rivets, 1 of which left the wheel when it failed; 40 by other methods, 2 of which left their wheels when they failed; and 39 by methods which were not stated; 36 tyres broke at rivet-holes, 2 at the weld, and 89 in the solid, and 396 split longitudinally or bulged.

* During the year, 36 horses, 5 donkeys, 37 beasts and cows, 341 sheep, 4 dogs, and 1 pig were run over and killed, and 3 horses, 2 cows, and 19 sheep were injured.

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Of the 257 axles which failed, 165 were engine axles, viz., 130 crank or driving, and 35 leading or trailing; 24 were tender axles, 4 were coach axles, and 64 were waggon axles, 1 of which was the axle of a salt waggon. 25 waggons belonged to owners other than the Railway Companies. Of the 130 crank or driving axles, 35 were made of iron and 95 of steel. The average mileage of 31 crank or driving axles made of iron was 242,136 miles, and of 75 crank or driving axles made of steel 291,289 miles.

Of the 272 rails which broke, 107 were double-headed, 146 were single-headed, 17 were Vignoles' rails; and 2 were bridge rails; of the double-headed rails 81 had been turned; 15 rails were made of iron, 256 of steel, and in 1 case the material was not stated.

II.—Accidents to Passengers from Causes other than Accidents to Trains, Rolling-Stock, Permanent-Way, &c., including Accidents from their own want of Caution or Misconduct; Accidents to Persons passing over Level-Crossings; Trespassers; and Others.

Of the 575 persons killed and 969 injured in this division, 108 of the killed and 747 of the injured were passengers. Of these 31 were killed and 85 injured by falling between carriages and platforms, viz., 21 killed and 37 injured when getting into, and 10 killed and 48 injured when alighting from, trains; 10 were killed and 419 injured by falling on to platforms, ballast, &c., viz., 3 killed and 67 injured when getting into, and 7 killed and 352 injured when alighting from, trains; 28 were killed and 10 injured whilst passing over the line at stations; 92 were injured by the closing of carriage doors; 18 were killed and 40 were injured by falling out of carriages during the travelling of trains; and 21 were killed and 101 injured from other causes. 77 persons were killed and 21 injured whilst passing over railways at level-crossings, viz., 54 killed and 13 injured at public level-crossings, 17 killed and 5 injured at occupation-crossings, and 6 killed and 3 injured at foot-crossings. 258 persons were killed and 121 injured when trespassing on the railways; 89 persons committed suicide on railways; and of other persons not specifically classed, but mostly private people having business on the companies' premises, 43 were killed and 80 injured.

III.—Accidents to Servants in the Employ of Railway Companies or Contractors, caused by the Travelling of Trains or the Movement of Vehicles used exclusively upon Railways.

During the year there were 525 servants of companies or contractors reported as having been killed and 2,823 injured, in addition to those included in Division I. Of these 19 were killed and 305 injured whilst coupling or uncoupling vehicles; 1 was killed and 41 were injured by coming in contact, whilst riding on vehicles during shunting, with other vehicles, &c. standing on adjacent lines; 4 were killed and 25 injured whilst passing over or standing upon buffers during shunting; 17 were killed and 229 injured in getting on or off, or by falling off engines, waggons, &c. during shunting; 10 were killed and 189 were injured whilst breaking, spragging, or chocking wheels; 8 were killed and 30 injured whilst attending to ground-points, marshalling trains, &c.; 17 were killed and 271 injured whilst moving vehicles by capstans, turn-tables, props, &c. during shunting; and 82 were killed and 551 injured by various other accidents during shunting operations; 13 were killed and 45 injured by falling off engines, &c. during the travelling of trains; 9 were killed and 25 injured by coming in contact with over-bridges or erections on the sides of the line during the travelling of trains; 7 were killed and 145 injured whilst getting on or off engines, vans, &c., during the travelling of trains; 6 were killed and 420 injured whilst attending to, or by the failure of, machinery, &c. of engines in steam; 63 were killed and 100 injured whilst working on the permanent-way, sidings, &c.; 5 were killed and 2 injured while attending to gates at level-crossings; 170 were killed and 227 injured whilst walking, crossing, or standing on the line on duty; 10 were killed and 48 injured by being caught between vehicles; 12 were killed and 53 injured by falling, or being caught between trains and platforms, walls, &c.; 60 were killed and 29 injured whilst walking, &c. on the line on the way home or to work; and 12 were killed and 88 injured from various other causes.

Altogether, the number of persons killed and injured on railways in the United Kingdom in the course of public traffic, during the year ending 31st December 1892, as reported to the Board of Trade, was as follows :—

	Killed.	Injured.	*Total for the corresponding Period in 1891.*		Increase.		Decrease.	
			Killed.	*Injured.*	Killed.	Injured.	Killed.	Injured.
Passengers :								
From accidents to trains, rolling-stock, permanent-way, &c.	21	601	*5*	*875*	16	—	—	274
By accidents from other causes -	108	747	*98*	*737*	10	10	—	—
Servants of companies or contractors :*								
From accidents to trains, rolling-stock, permanent-way, &c.	9	92	*12*	*154*	—	—	3	62
By accidents from other causes -	525	2,823	*537*	*3,007*	—	—	12	184
Persons passing over railways at level-crossings.	77	21	*66*	*31*	11	—	—	10
Trespassers (including suicides) - -	347	121	*393*	*161*	—	—	46	40
Other persons not coming in above classification.	43	80	*57*	*95*	—	—	14	15
Total - - - -	1,130	4,485	*1,168*	*5,060*	—	—	38	575

* Of contractor's servants 19 were killed and 20 injured (*see* page 18).

Note.—In addition to the above, the Railway Companies have reported to the Board of Trade, in pursuance of the 6th Section of the Regulation of Railways Act, 1871, the following accidents which occurred upon their premises, but in which the movement of vehicles used exclusively upon railways was not concerned, namely :—10 passengers killed and 177 injured whilst ascending or descending steps at stations; 49 injured by being struck by barrows, falling over packages, &c. on station platforms; 2 killed and 44 injured by falling off platforms; and 66 injured from other causes. Of servants of companies or contractors, 5 killed and 1,393 injured whilst loading, unloading, or sheeting waggons; 391 injured whilst moving or carrying goods in warehouses, &c.; 3 killed and 181 injured whilst working at cranes or capstans; 1 killed and 486 injured by the falling of waggon-doors, lamps, bales of goods, &c.; 1 killed and 384 injured by falling off, or when getting on or off, stationary engines or vehicles; 16 killed and 407 injured by falling off platforms, ladders, scaffolds, &c. 1 killed and 433 injured by stumbling whilst walking on the line or platforms; 337 injured whilst attending to stationary engines in sheds; 1 killed and 84 injured by being trampled on or kicked by horses; 8 killed and 821 injured whilst working on the line or in sidings; and 5 killed and 593 injured from various other causes. Of other persons, most of whom were transacting business on the companies' premises, 21 were killed and 145 injured—making a total in this class of accidents of 74 persons killed and 5,991 injured.

Thus the total number of personal accidents reported to the Board of Trade by the several Railway Companies during the year amounts to 1,204 persons killed and 10,476 injured.

TABLE No. 1.

GENERAL TOTAL.

NUMBER of PERSONS reported, during the Year ending 31st December 1892, as KILLED or INJURED on the RAILWAYS of the UNITED KINGDOM, distinguishing between PASSENGERS, SERVANTS of the COMPANIES or of CONTRACTORS, and OTHER PERSONS; and distinguishing also in the case of the Two former Classes between ACCIDENTS caused by ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c., and ACCIDENTS happening otherwise.

	England and Wales.		Scotland.		Ireland.		United Kingdom.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS:—								
From accidents to trains, rolling-stock, permanent-way, &c. -	21	574	–	24	–	3	21	601
By accidents from other causes, including accidents from their own want of caution or misconduct - - -	87	672	14	71	7	4	108	747
SERVANTS:—								
From accidents to trains, rolling-stock, permanent-way, &c. -	9	79	–	11	–	2	9	92
By accidents from other causes, including accidents from their own want of caution or misconduct - - -	417	2,536	89	263	19	24	525	2,823
OTHER PERSONS:—								
Whilst passing over railways at level-crossings - -	67	14	7	7	3	–	77	21
Trespassers - - -	170	83	70	34	18	4	258	121
Suicides - - - -	74	–	11	–	4	–	89	–
Miscellaneous, not included in either of the above - -	33	66	4	12	6	2	43	80
TOTAL - -	878	4,024	195	422	57	39	1,130	4,485

N.B.—The Board of Trade state the cause of accident as returned by the Companies, but do not guarantee or otherwise adopt the statement, except in cases where an official inquiry has been held.

TABLE No. 2.

NUMBER of PERSONS reported, during the Year ending 31st December 1892, as KILLED or INJURED in the UNITED KINGDOM by the TRAVELLING of TRAINS or the MOVEMENT of VEHICLES used exclusively upon RAILWAYS, distinguishing between PASSENGERS, SERVANTS of RAILWAY COMPANIES, and OTHER PERSONS, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury.

	England and Wales.		Scotland.		Ireland.		United Kingdom.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS:—								
From accidents to trains, &c., *see Table No. 3*	21	574	–	24	–	3	21	601
From falling between trains and platforms	21	75	7	10	3	–	31	85
From falling on to the platform, ballast, &c. when getting into or out of trains	8	381	2	37	–	1	10	419
Whilst crossing the line at stations	24	8	2	2	2	–	28	10
By the closing of carriage doors	–	85	–	7	–	–	–	92
From falling out of carriages during the travelling of trains	15	29	3	8	–	3	18	40
By other accidents	19	94	–	7	2	–	21	101
TOTAL	108	1,246	14	95	7	7	129	1,348
SERVANTS:—								
From accidents to trains, &c., *see Table No. 3*	9	79	–	11	–	2	9	92
Whilst coupling or uncoupling vehicles	12	257	4	42	3	6	19	305
By coming in contact, whilst riding on vehicles during shunting, with other vehicles, &c. standing on adjacent lines	1	31	–	9	–	1	1	41
Whilst passing over or standing upon buffers during shunting	3	20	1	5	–	–	4	25
When getting on or off, or falling off, engines, waggons, &c. during shunting	13	196	4	31	–	2	17	229
Whilst braking, spragging, or chocking wheels	7	169	3	18	–	2	10	189
Whilst attending to ground-points, marshalling trains, &c.	3	27	5	3	–	–	8	30
Whilst moving vehicles by capstans, turn-tables, props, &c. during shunting	16	262	1	8	–	1	17	271
By other accidents during shunting operations, not included in the preceding	65	511	15	36	2	4	82	551
From falling off engines, &c. during the travelling of trains	11	34	2	10	–	1	13	45
By coming in contact with over-bridges or erections on the sides of the line during the travelling of trains	8	18	1	6	–	1	9	25
When getting on or off engines, vans, &c. during the travelling of trains	6	128	1	14	–	3	7	145
Whilst attending to, or by the failure of, machinery, &c. of engines in steam	6	408	–	12	–	–	6	420
Whilst working on the permanent-way, sidings, &c.	50	93	12	7	1	–	63	100
Whilst attending to gates at level-crossings	4	1	–	–	1	1	5	2
Whilst walking, crossing, or standing on the line on duty	139	188	24	37	7	2	170	227
From being caught between vehicles	7	41	2	7	1	–	10	48
From falling or being caught between trains and platforms, walls, &c.	8	46	4	7	–	–	12	53
Whilst walking, &c. along the line on the way home or to work	46	22	10	7	4	–	60	29
Miscellaneous	12	84	–	4	–	–	12	88
TOTAL	426	2,615	89	274	19	26	534	2,915
OTHER PERSONS:—								
Whilst passing over railways at level-crossings	67	14	7	7	3	–	77	21
Trespassers	170	83	70	34	18	4	258	121
Suicides	74	–	11	–	4	–	89	–
Miscellaneous	33	66	4	12	6	2	43	80
TOTAL	344	163	92	53	31	6	467	222
SUMMARY:—								
Passengers	108	1,246	14	95	7	7	129	1,348
Servants	426	2,615	89	274	19	26	534	2,915
Other persons	344	163	92	53	31	6	467	222
TOTAL ALL CLASSES	878	4,024	195	422	57	39	1,130	4,485

TABLE No. 3.

ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c. reported, during the Year ending 31st December 1892, as having occurred on the RAILWAYS in the UNITED KINGDOM, distinguishing the different Classes of Accident, and the Number of Passengers and others, and of Servants of Railway Companies, KILLED or INJURED in each Class of Accident.

—	NUMBER OF CASES.				NUMBER OF PASSENGERS AND OTHERS.								NUMBER OF SERVANTS.							
	England and Wales.	Scotland.	Ireland.	United Kingdom.	England and Wales.		Scotland.		Ireland.		United Kingdom.		England and Wales.		Scotland.		Ireland.		United Kingdom.	
					Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Collisions between passenger trains or parts of passenger trains	25	3	–	28	11	218	–	8	–	–	11	226	2	19	–	–	–	–	2	19
Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line	34	7	2	43	9	188	–	3	–	2	9	193	1	21	–	1	–	2	1	24
Collisions between goods trains or parts of goods trains	10	3	–	13	–	1	–	–	–	–	–	1	–	12	–	4	–	–	–	16
Trains coming in contact with projections from other trains travelling on parallel lines	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Passenger trains or parts of passenger trains leaving the rails	24	5	6	35	1	43	–	2	–	–	1	45	4	5	–	4	–	–	4	9
Goods trains or parts of goods trains, engines, &c. leaving the rails	9	1	1	11	–	–	–	–	–	–	–	–	1	3	–	–	–	–	1	3
Trains or engines travelling in the wrong direction through points	7	–	1	8	–	45	–	–	–	–	–	45	–	7	–	–	–	–	–	7
Trains running into stations or sidings at too high a speed	14	3	1	18	–	74	–	11	–	–	–	85	–	5	–		–	–	–	5
Trains running over cattle or other obstructions on the line	119	40	9	168	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Trains running through gates at level-crossings	31	–	7	38	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
The bursting of boilers or tubes, &c. of engines	3	–	–	3	–	–	–	–	–	–	–	–	–	3	–	–	–	–	–	3
The failure of machinery, springs, &c. of engines	2	1	1	4	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	2
The failure of tyres	501	22	–	523	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
,, ,, wheels	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
,, ,, axles	185	70	2	257	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–
,, ,, brake apparatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
,, ,, couplings	8	–	3	11	–	1	–	–	–	1	–	2	1	3	–	–	–	–	1	3
,, ,, ropes used in working inclines	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
,, ,, tunnels, bridges, viaducts, culverts, &c.	3	1	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Broken rails	228	32	12	272	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
The flooding of portions of permanent-way	9	1	–	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Slips in cuttings or embankments	9	–	–	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fire in trains	4	2	–	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fire at stations or involving injury to bridges or viaducts	14	–	–	14	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Other accidents	6	–	–	6	–	3	–	–	–	–	–	3	–	1	–	–	–	–	–	1
TOTAL					21	574	–	24	–	3	21	601	9	79	–	11	–	2	9	92

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TABLE No. 4.

ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c. on the RAILWAYS in the UNITED KINGDOM, reported
RAILWAYS on which the same have occurred, and the Number of Passengers and others, and of

NAME OF COMPANY.	Collisions between passenger trains or parts of passenger trains.	Collisions between passenger trains and goods or mineral trains, engines, &c.	Collisions between goods trains or parts of goods trains.	Trains coming in contact with projections from other trains travelling on parallel lines.	Passenger trains or parts of passenger trains leaving the rails.	Goods trains or parts of goods trains, engines, &c. leaving the rails.	Trains or engines travelling in the wrong direction through points.	Trains running into stations or sidings at too high a speed.	Trains running over cattle or other obstructions on the line.	Trains running through gates at level-crossings.	The bursting of boilers or tubes, &c. of engines.	The failure of machinery, springs, &c. of engines.	The failure of tyres.
ENGLAND AND WALES.													
Cambrian	–	–	–	–	1	1	–	–	–	–	–	–	–
Colne Valley	–	1	–	–	–	–	–	–	–	–	–	–	–
Furness	–	–	–	–	–	–	–	–	–	–	–	–	–
Furness and London and North-Western.	–	–	–	–	–	–	–	–	–	–	–	–	–
Great Eastern	3	2	–	–	2	–	1	3	7	10	–	1	7
Great Northern	–	1	2	–	–	–	1	–	–	–	–	–	3
Great Northern and London and North-Western.	–	–	–	–	1	–	–	–	–	–	–	–	–
Great Western	2	3	–	–	–	1	–	1	29	6	–	–	12
Hammersmith and City	–	–	–	–	–	–	–	–	–	–	–	–	–
Hull, Barnsley, and West Riding.	–	–	1	–	–	–	–	–	–	–	–	–	–
Isle of Wight Central	–	–	–	–	–	2	–	–	–	–	–	–	–
Lancashire and Yorkshire	5	4	3	–	3	–	2	1	16	4	–	–	2
Lancashire and Yorkshire and London and North-Western.	1	1	–	–	–	–	–	–	–	–	–	–	–
Leeds New Station Committee	–	–	–	–	–	–	–	–	–	–	–	–	–
London and North-Western	3	5	–	–	2	1	–	–	2	–	–	–	25
London and North-Western and Great Western.	–	–	–	–	1	–	–	1	–	–	–	–	–
London and North-Western and Midland.	–	–	–	–	1	–	–	–	–	–	–	–	–
London and South-Western	3	4	1	–	1	1	–	–	6	4	–	1	11
London, Brighton, and South Coast.	2	1	–	–	1	–	–	1	1	–	–	–	–
London, Chatham, and Dover	–	–	–	–	–	–	1	1	–	–	–	–	–
London and Tilbury and Southend.	–	–	–	–	–	–	–	–	–	–	–	–	–
Manchester, Sheffield, and Lincolnshire.	–	–	–	–	–	–	–	–	–	–	–	–	1
Manchester, South Junction and Altrincham.	1	–	–	–	–	–	–	–	–	–	–	–	–
Maryport and Carlisle	–	–	–	–	–	–	–	–	–	–	–	–	–
Mersey	–	–	–		1	–	–	–	–	–	–	–	–
Metropolitan	–	–	–	–	1	–	–	–	–	–	–	–	–
Metropolitan District	–	–	–	–	–	–	–	–	–	–	–	–	–
Metropolitan and Metropolitan District.	–	–	–	–	–	–	–	–	–	–	–	–	–
Midland	2	2	2	–	–	–	1	1	1	–	–	–	18
Midland and Great Western	–	–	–	–	–	–	–	–	–	–	–	–	–
Midland and South Western Junction.	–	–	–	–	1	–	–	–	–	–	–	–	–
Neath and Brecon	–	–	–	–	1	1	–	–	2	–	–	–	–
Northampton and Banbury Junction.	–	–	–	–	–	1	–	–	–	–	–	–	–
North-Eastern	2	5	1	–	3	1	1	5	54	7	3	–	27
North London	–	–	–	–	–	–	–	–	–	–	–	–	–

TABLE No. 4.

during the Year ending 31st December 1892, distinguishing the different CLASSES of ACCIDENTS, the different the Servants of Railway Companies, KILLED or INJURED on each Railway by those Accidents.

The failure of wheels.	The failure of axles.	The failure of brake apparatus.	The failure of couplings.	The failure of ropes used in working inclines.	The failure of tunnels, bridges, viaducts, or culverts.	Broken rails.	The flooding of portions of permanent-way.	Slips in cuttings or embankments.	Fire in trains.	Fire at stations or involving injury to bridges or viaducts.	Other accidents.	Number of Passengers and others.		Number of Servants.		Total all Classes	
												Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	–	1
–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	2	–	3
–	5	–	–	–	–	21	–	–	–	–	1	–	–	–	1	–	1
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	5	–	–	–	–	4	–	–	–	–	–	5	159	1	12	6	171
–	8	–	–	–	–	13	–	1	–	–	–	–	5	–	5	–	10
–	–	–	–	–	–	–	–	–	–	–	–	1	3	2	–	3	3
–	21	–	–	–	1	18	–	2	1	4	–	–	22	1	2	1	24
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	3
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	1	–	3	–	–	10	1	1	–	1	–	–	27	–	11	–	38
–	–	–	–	–	–	–	–	–	–	–	–	–	12	–	1	–	13
–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–
–	62	–	–	–	–	25	1	–	–	–	–	1	76	1	6	2	82
–	–	–	–	–	–	10	–	–	–	–	–	–	1	–	–	–	1
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1
–	9	–	2	–	–	27	–	1	1	1	1	–	16	1	6	1	22
–	5	–	–	–	–	25	–	–	–	–	–	–	6	–	–	–	6
–	1	–	–	–	–	18	–	–	–	–	–	–	9	–	1	–	10
–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–
–	3	–	–	–	–	3	1	–	–	–	–	–	–	–	–	–	–
–	1	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	2
–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	2	–	–	–	–	13	–	–	–	–	–	–	5	–	–	–	5
–	1	–	–	–	–	4	1	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	10	–	–	–	–	18	–	–	–	–	2	5	50	–	11	5	61
–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	22	–	–	–	2	13	5	3	2	4	1	9	96	1	15	10	111
–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

[*Continued on next page.*

TABLE No. 4.—Number of Accidents to Trains,

NAME OF COMPANY.	Collisions between passenger trains or parts of passenger trains.	Collisions between passenger trains and goods or mineral trains, engines, &c.	Collisions between goods trains or parts of goods trains.	Trains coming in contact with projections from other trains travelling on parallel lines.	Passenger trains or parts of passenger trains leaving the rails.	Goods trains or parts of goods trains, engines, &c. leaving the rails.	Trains or engines travelling in the wrong direction through points.	Trains running into stations or sidings at too high a speed.	Trains running over cattle or other obstructions on the line.	Trains running through gates at level-crossings.	The bursting of boilers or tubes, &c. of engines.	The failure of machinery, springs, &c. of engines.	The failure of tyres.
North Wales Narrow Gauge	–	–	–	–	–	–	–	–	–	–	–	–	–
North Staffordshire	1	1	–	–	–	–	–	–	–	–	–	–	1
North Union	–	1	–	–	–	–	–	–	–	–	–	–	–
Oldham, Ashton-under-Lyne, and Guide Bridge Junction.	–	–	–	–	–	–	–	–	–	–	–	–	–
Pembroke and Tenby	–	–	–	–	–	–	–	–	–	–	–	–	–
Preston and Wyre	–	1	–	–	1	–	–	–	–	–	–	–	–
Somerset and Dorset	–	–	–	–	–	–	–	–	1	–	–	–	1
South Eastern	–	1	–	–	2	–	–	–	–	–	–	–	2
Weymouth and Portland	–	–	–	–	1	–	–	–	–	–	–	–	–
Wirral and Mersey Joint	–	1	–	–	–	–	–	–	–	–	–	–	–
Private Owners	–	–	–	–	–	–	–	–	–	–	–	–	391
TOTAL, ENGLAND AND WALES	25	34	10	–	24	9	7	14	119	31	3	2	501
SCOTLAND.													
Caledonian	–	1	–	–	1	–	–	1	28	–	–	–	14
Glasgow and South-Western	1	2	1	–	2	–	–	1	–	–	–	1	1
Glasgow, Barrhead, and Kilmarnock.	–	–	–	–	–	–	–	–	–	–	–	–	–
Great North of Scotland	–	1	–	–	–	–	–	–	–	–	–	–	–
Highland	1	–	–	–	–	–	–	–	–	–	–	–	–
North British	–	2	2	–	2	–	–	1	12	–	–	–	6
Perth General Station	–	1	–	–	–	–	–	–	–	–	–	–	–
Portpatrick and Girvan	1	–	–	–	–	1	–	–	–	–	–	–	–
Private Owners	–	–	–	–	–	–	–	–	–	–	–	–	1
TOTAL, SCOTLAND	3	7	3	–	5	1	–	3	40	–	–	1	22
IRELAND.													
Belfast and County Down	–	–	–	–	–	–	–	–	–	–	–	–	–
Belfast and Northern Counties	–	1	–	–	1	–	–	–	–	–	–	–	–
Cavan, Leitrim, and Roscommon.	–	–	–	–	–	1	–	–	1	2	–	–	–
Dublin, Wicklow, and Wexford	–	–	–	–	1	–	–	–	–	1	–	–	–
Great Northern of Ireland	–	1	–	–	–	–	–	–	1	–	–	1	–
Great Southern and Western	–	–	–	–	1	–	–	–	1	–	–	–	–
Midland Great Western	–	–	–	–	1	–	1	–	–	1	–	–	–
Waterford and Limerick	–	–	–	–	–	–	–	–	6	3	–	–	–
West Clare	–	–	–	–	2	–	–	1	–	–	–	–	–
TOTAL, IRELAND	–	2	–	–	6	1	1	1	9	7	–	1	–
TOTAL, UNITED KINGDOM	28	43	13	–	35	11	8	18	168	38	3	4	523

Rolling-Stock, Permanent-Way, &c.—*continued.*

The failure of wheels.	The failure of axles.	The failure of brake apparatus.	The failure of couplings.	The failure of ropes used in working inclines.	The failure of tunnels, bridges, viaducts, or culverts.	Broken rails.	The flooding of portions of permanent-way.	Slips in cuttings or embankments.	Fire in trains.	Fire at stations or involving injury to bridges or viaducts.	Other accidents.	Number of Passengers and others.		Number of Servants.		Total all Classes	
												Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–
–	–	–	–	–	–	1	–	–	–	–	–	–	7	–	–	–	7
–	–	–	–	–	–	–	–	–	–	–	–	–	6	–	–	–	6
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	1	–	1	–	–	–	–	1	–	–	–	–	1	–	–	–	1
–	–	–	1	–	–	–	–	–	–	1	–	–	29	2	1	2	30
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	41	–	–	–	41
1	22	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	185	–	8	–	3	228	9	9	4	14	6	21	574	9	79	30	653
–	31	–	–	–	–	15	–	–	1	–	–	–	1	–	–	–	1
–	4	–	–	–	1	3	1	–	1	–	–	–	7	–	4	–	11
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	8	–	–	–	8
–	26	–	–	–	–	13	–	–	–	–	–	–	6	–	7	–	13
–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	2
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	70	–	–	–	1	32	1	–	2	–	–	–	24	–	11	–	35
–	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	1
–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	2	–	4
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	1	–	–	–	–	5	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	7	–	–	–	–	–	–	–	–	–	–	–
–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	2	–	3	–	–	12	–	–	–	–	–	–	3	–	2	–	5
1	**257**	–	**11**	–	**4**	**272**	**10**	**9**	**6**	**14**	**6**	**21**	**601**	**9**	**92**	**30**	**693**

TABLE No. 5.

NUMBER of SERVANTS of RAILWAY COMPANIES and CONTRACTORS reported, during the Year ending 3
used exclusively upon RAILWAYS, distinguishing the Number which have occurred on each Railway or Syste

NAME OF COMPANY.	From accidents to trains, &c. *See* Table No. 4.		Whilst coupling or uncoupling vehicles.		By coming in contact whilst riding on vehicles during shunting with other vehicles, &c. standing on adjacent lines.		Whilst passing over, or standing upon, buffers during shunting.		When getting on or off, or falling off, engines, waggons, &c. during shunting.		Whilst braking, spragging, or chocking wheels.		Whilst attending to ground-points, marshalling trains, &c.		Whilst moving vehicles by capstans, turntables, props, &c. during shunting.		By oth accide during shunti operati not inclu in th preced	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	ju
ENGLAND AND WALES.																		
Barry	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	1	–	
Cambrian	–	1	–	1	–	–	–	–	–	–	–	1	–	1	–	–	–	
Cheshire Lines	–	–	–	1	–	–	–	–	–	2	–	–	1	–	1	1	3	
Cleator and Workington Junction	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Colne Valley	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Eastern and Midlands	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
East London	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Furness	–	1	–	–	–	–	–	–	–	1	–	1	–	–	1	–	1	
Great Eastern	1	12	2	4	–	–	–	–	1	4	1	1	–	1	–	8	2	1
Great Northern	–	5	3	10	–	5	–	–	1	1	1	5	–	–	1	8	4	1
Great Northern and Great Eastern Joint.	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	
Great Northern and London and North-Western.	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Great Western	1	2	3	40	–	5	1	3	4	38	3	36	1	5	1	23	9	7
Hull, Barnsley, and West Riding	–	3	–	1	–	–	–	–	–	1	–	–	–	–	–	1	–	
Lancashire and Yorkshire	–	11	–	46	–	4	–	2	–	31	–	28	1	2	2	50	2	7
Lancashire and Yorkshire and London and North-Western.	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	4	1	
London and North-Western	1	7	2	65	–	5	1	4	2	44	1	50	–	12	1	107	16	13
London and North-Western and Great Western.	–	–	–	7	–	1	–	–	–	1	–	2	–	1	–	5	–	
London and North-Western and Manchester, Sheffield, and Lincolnshire.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
London and North-Western and Midland.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
London and South-Western	1	6	–	19	–	–	–	2	1	10	–	4	–	–	1	4	5	4
London, Brighton, and South Coast	–	–	–	2	–	–	–	1	1	1	–	–	–	–	–	1	–	
London, Chatham, and Dover	–	1	–	2	–	–	–	–	–	–	–	–	–	–	–	1	1	
London, Tilbury, and Southend	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	
Manchester, Sheffield, and Lincolnshire	–	–	–	8	–	–	1	–	–	4	–	1	–	–	2	4	1	1
Manchester South Junction and Altrincham.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Maryport and Carlisle	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	
Mersey	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Metropolitan	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	
Metropolitan District	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Midland	–	11	1	10	–	2	–	1	1	15	1	6	–	–	3	10	10	3
Midland, and Great Northern Joint	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	
Midland and Great Western Joint	–	–	–	2	–	–	–	–	–	–	–	3	–	–	–	–	–	
Midland and South-Western Junction	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Neath and Brecon	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	
Normanton Joint Committee	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	
North and South-Western Junction	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	
North-Eastern	1	15	1	31	1	7	–	5	1	29	–	29	–	4	2	29	2	6

TABLE No. 5.

cember 1892, as KILLED or INJURED in the UNITED KINGDOM by the TRAVELLING of TRAINS or the MOVEMENT of VEHICLES lway, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury.

From lling off ngines, e. during e travel- ling of rains.		By coming in contact with over-bridges or erections on the sides of the line during the travelling of trains.		When getting on or off engines, vans, &c. during the travelling of trains.		Whilst attending to, or by the failure of, machinery, &c. of engines in steam.		Whilst working on the permanent-way, sidings, &c.		Whilst attending to gates at level-crossings.		Whilst walking, crossing, or standing on the line on duty.		From being caught between vehicles.		From falling or being caught between trains and platforms, walls, &c.		Whilst walking, &c. on the line on the way home or to work.		Mis-cellaneous.		TOTAL.	
ed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.
-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	2	5
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	5
-	-	-	-	-	-	-	-	1	-	-	-	1	2	-	1	-	-	2	-	-	-	9	7
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-	-	-	4	9
1	-	-	1	-	4	1	3	3	5	-	1	16	11	1	3	-	4	2	1	1	3	32	81
-	3	1	1	-	4	1	1	3	4	-	-	12	10	-	1	1	-	4	1	3	8	35	81
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
3	5	5	2	1	23	1	75	6	13	1	-	18	14	1	3	1	8	5	3	-	9	65	381
1	-	-	-	1	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	3	8
4	9	-	5	-	30	-	79	5	6	-	-	14	29	1	2	1	4	5	1	-	14	35	427
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	8
1	7	1	3	1	30	-	169	11	26	-	-	17	34	-	20	2	12	8	7	2	28	67	762
-	-	-	-	-	-	-	-	1	1	-	-	-	1	-	-	-	2	1	-	-	-	2	24
-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	3	-	3	-	10	-	12	2	6	-	-	6	5	-	5	-	1	1	1	-	3	17	141
-	3	-	-	-	-	-	1	3	1	-	-	4	10	-	-	-	-	1	-	-	1	9	26
-	-	-	-	1	1	-	1	1	2	-	-	3	1	-	-	1	1	2	1	2	-	11	14
-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	2	2
-	1	-	-	-	3	-	1	2	1	-	-	4	5	-	-	-	-	1	2	-	-	11	43
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
-	1	-	-	-	-	-	2	-	3	-	-	2	1	-	-	-	-	-	-	-	-	2	9
-	1	-	-	-	1	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	4
-	-	-	-	2	1	1	2	5	6	1	-	22	22	1	1	-	1	4	1	-	3	52	124
-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	2
-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	7
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
1	1	-	2	-	13	1	52	3	11	1	-	6	28	2	3	1	6	4	3	2	5	29	341

[Continued on next page

TABLE No. 5.—Number of Servants report

NAME OF COMPANY.	From accidents to trains, &c. *See* Table No. 4.		Whilst coupling or uncoupling vehicles.		By coming in contact whilst riding on vehicles during shunting with other vehicles, &c. standing on adjacent lines.		Whilst passing over, or standing upon, buffers during shunting.		When getting on or off, or falling off, engines, waggons, &c. during shunting.		Whilst braking, spragging, or chocking wheels.		Whilst attending to ground-points, marshalling trains, &c.		Whilst moving vehicles by capstans, turntables, props, &c. during shunting.		By other accidents during shunting operations not include in the preceding	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
North London	–	–	–	1	–	–	–	–	–	4	–	–	–	–	–	–	–	2
North Staffordshire	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–	1	2
North Union	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–
Otley and Ilkley Joint Committee	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Preston and Wyre	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Redruth and Chacewater	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–
Rhondda and Swansea Bay	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–	–	–
Rhymney	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	1
Severn and Wye and Severn Bridge	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Sheffield and Midland Committee	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–
Somerset and Dorset	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–
South-Eastern	2	1	–	1	–	–	–	–	–	2	–	1	–	–	–	1	3	1
Swansea and Mumbles	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Taff Vale	–	–	–	1	–	–	–	–	1	1	–	1	–	–	–	1	–	
Tottenham and Hampstead Joint	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
West London Extension	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
TOTAL, ENGLAND AND WALES	9	79	12	257	1	31	3	20	13	196	7	169	3	27	16	262	65	51
SCOTLAND.																		
Caledonian	–	–	3	19	–	2	–	3	1	16	2	12	4	1	–	5	5	1
City of Glasgow Union	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Dundee and Arbroath Joint	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Glasgow and South-Western	–	4	–	6	–	–	–	2	1	1	–	1	–	–	–	–	–	
Glasgow, Barrhead, and Kilmarnock	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	
Great North of Scotland	–	–	–	–	–	2	–	–	1	–	–	–	–	–	1	–	2	
Highland	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–	2	
North British	–	7	1	16	–	5	1	–	1	13	1	5	–	2	–	3	6	
Perth General Station	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
TOTAL, SCOTLAND	–	11	4	42	–	9	1	5	4	31	3	18	5	3	1	8	15	
IRELAND.																		
Ballycastle	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	
Belfast and County Down	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Belfast and Northern Counties	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Dublin, Wicklow, and Wexford	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	
Great Northern of Ireland	–	–	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	
Great Southern and Western	–	–	1	3	–	–	–	–	–	1	–	2	–	–	–	–	1	
Midland Great Western	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	
Sligo, Leitrim, and Northern Counties	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Waterford and Limerick	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	
TOTAL, IRELAND	–	2	3	6	–	1	–	–	–	2	–	2	–	–	–	1	2	
TOTAL, UNITED KINGDOM	9	92	19	305	1	41	4	25	17	229	10	189	8	30	17	271	82	

as Killed or Injured, &c.—*continued.*

From falling off engines, &c. during the travelling of trains.		By coming in contact with over-bridges or erections on the sides of the line during the travelling of trains.		When getting on or off engines, vans, &c. during the travelling of trains.		Whilst attending to, or by the failure of, machinery, &c. of engines in steam.		Whilst working on the permanent-way, sidings, &c.		Whilst attending to gates at level-crossings.		Whilst walking, crossing, or standing on the line on duty.		From being caught between vehicles.		From falling or being caught between trains and platforms, walls, &c.		Whilst walking, &c. on the line on the way home or to work.		Mis-cellaneous.		Total.	
Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.	Killed	In-jured.	Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.
–	–	–	1	–	4	–	3	1	1	–	–	2	1	–	–	–	1	–	–	–	6	3	24
–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	5
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–
–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	1
–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	1	–	–	–	4	1
–	–	–	–	–	–	–	2	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–	7
–	–	–	–	–	1	1	3	–	4	–	.	3	2	1	1	–	4	3	1	–	–	13	32
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
–	–	–	–	–	1	–	1	–	1	–	–	1	1	–	–	–	1	1	–	–	–	3	11
–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1
11	34	8	18	6	128	6	408	50	93	4	1	139	188	7	41	8	46	46	22	12	84	426	2,615
1	5	–	4	–	5	–	4	5	4	–	–	13	14	–	2	2	4	3	3	–	2	39	119
–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	–	–	2
–	–	–	–	–	–	–	–	1	1	–	–	1	–	–	–	–	–	1	–	–	–	3	1
–	1	–	1	–	–	–	3	1	–	–	–	2	5	–	2	1	–	2	1	–	1	7	37
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	5
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	4	1
1	4	1	1	1	7	–	5	5	1	–	–	8	17	2	3	–	3	4	3	–	1	32	107
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
2	10	1	6	1	14	–	12	12	7	–	–	24	37	2	7	4	7	10	7	–	4	89	274
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–	–	–	1	–	–	–	3	–
–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	2	2
–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	2	–
–	–	–	–	–	–	–	–	–	–	–	–	2	1	1	–	–	–	2	–	–	–	6	3
–	1	–	–	–	2	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	4	10
–	–	–	1	–	–	–	–	–	–	–	1	1	1	–	–	–	–	–	–	–	–	1	5
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5
–	1	–	1	–	3	–	–	1	–	1	1	7	2	1	–	–	–	4	–	–	–	19	26
13	45	9	25	7	145	6	420	63	100	5	2	170	227	10	48	12	53	60	29	12	88	534	2,915

TABLE No. 6.

TABLE showing the different OCCUPATIONS of SERVANTS of RAILWAY COMPANIES and CONTRACTORS who were KILLED and INJURED during the Year ending 31st December 1892, and classifying their INJURIES as far as practicable.

CLASS OF SERVICE.	Fatal.	Amputations.			Fractures.		Dislocations.	Crushes.			Scalds, Burns.	Sprains, Cuts, or Bruises.				Unspecified Injury to				Miscellaneous.	Total Injured.
		Legs or Arms.	Feet or Hands.	Toes or Fingers.	Legs or Arms.	Collar-bones or Ribs.		Legs or Arms.	Feet or Hands.	Body.		Severe.	Shaken.	Slight.		Head.	Body.	Legs or Arms.	Feet or Hands.		
Brakesmen and Goods-guards	45	6	5	3	9	11	4	10	55	12	2	111	19	10	4	34	47	64	58	3	467
Capstanmen	2	–	–	–	3	–	–	–	10	5	–	7	2	–	–	1	8	15	12	–	63
Carmen	3	–	–	–	1	1	–	–	4	–	–	3	1	–	–	2	3	1	3	–	19
Carriage-cleaners	6	1	–	–	–	1	–	–	1	–	–	4	4	1	1	2	1	5	3	–	24
Carriage or waggon examiners	5	–	–	–	–	–	–	–	–	–	–	5	1	–	1	3	1	2	3	–	16
Checkers	6	–	–	–	1	–	–	–	1	–	–	3	–	–	1	–	3	4	4	–	17
Chockers, Chain-boys, and Slippers.	5	–	–	1	4	1	–	2	7	3	–	8	1	–	–	1	4	4	18	–	54
Clerks	2	–	1	–	3	–	–	–	2	–	–	1	1	–	1	1	–	3	3	–	16
Engine-cleaners	3	1	1	–	5	2	–	3	14	6	2	8	7	–	–	–	3	8	18	–	78
Engine-drivers	33	2	1	5	12	10	6	5	17	2	28	76	12	12	2	16	39	50	25	7	327
Firemen	20	3	7	1	6	2	6	3	35	2	36	103	24	13	3	34	37	43	61	2	421
Gatekeepers	7	–	–	–	2	–	–	–	–	–	–	–	1	–	–	1	–	–	–	–	4
Greasers	9	–	1	–	1	1	–	–	2	1	1	3	–	1	–	1	1	1	–	–	14
Guards, Passenger	8	1	1	–	6	1	1	3	5	1	–	26	7	4	1	6	4	11	6	–	84
Horse-drivers	5	–	–	–	4	1	–	2	14	6	–	6	1	–	1	–	2	2	7	1	47
Inspectors	8	1	–	–	4	2	1	–	–	–	–	6	1	2	1	3	2	1	1	–	25
Labourers	47	1	1	1	11	7	–	5	7	5	1	23	4	3	4	7	16	13	7	–	116
Lampmen	7	–	–	–	1	2	1	–	1	–	–	3	1	–	–	1	2	–	–	–	12
Loaders and Sheeters	2	–	–	–	–	1	–	–	4	–	–	–	–	–	–	1	1	3	1	–	11
Mechanics	18	2	1	–	1	1	1	–	3	–	–	7	4	1	2	–	3	4	4	1	35
Messengers	3	–	–	1	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	3
Number-takers	2	–	–	1	1	1	–	–	–	–	–	3	–	–	–	1	–	3	–	–	10
Permanent-way Men	109	5	2	1	8	8	3	4	4	1	–	25	12	3	5	14	16	12	8	–	131
Pointsmen	5	1	–	–	–	–	–	–	1	1	–	2	1	–	–	–	1	1	1	–	9
Policemen	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1
Porters	75	9	4	5	17	12	3	8	62	27	–	73	16	8	6	20	41	38	48	–	397
Shunters	36	9	2	2	11	13	2	8	50	10	–	77	11	4	5	15	29	60	43	8	359
Signal-fitters	8	–	–	–	–	–	–	1	1	–	–	2	3	–	1	–	–	2	–	–	10
Signalmen	8	2	–	1	1	–	–	–	–	–	1	6	3	–	1	1	2	2	3	–	23
Station-masters	4	–	–	–	1	1	1	–	1	–	–	1	1	–	–	–	–	1	–	–	7
Ticket-collectors	1	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	1	–	2	–	5
Watchmen	3	–	–	–	–	–	–	–	–	–	–	2	–	–	–	1	–	1	–	–	4
Yardsmen	4	–	1	1	1	–	–	–	1	1	–	7	3	–	–	2	1	2	1	–	21
Miscellaneous	13	2	–	–	5	2	–	1	5	3	–	7	5	5	–	3	8	9	8	2	65
Contractors' Servants	19	–	1	–	2	2	1	2	1	–	–	6	1	–	–	1	2	–	1	–	20
TOTAL	534	46	29	23	121	83	30	57	308	86	71	617	148	67	40	172	278	365	350	24	2915

TABLE No. 7.

NUMBER of PERSONS reported, during the Year ending 31st December 1892, as having been KILLED or INJURED whilst upon the Companies' Premises, by Accidents in which the Movement of Vehicles used exclusively upon Railways was not concerned, distinguishing between Passengers, Servants of Companies, and other Persons, and classifying, as far as practicable, the Nature and Causes of the Accidents occasioning the Death or Injury.

	England and Wales.		Scotland.		Ireland.		United Kingdom.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS :—								
Whilst ascending or descending steps at stations	10	176	—	1	—	—	10	177
By being struck by barrows, by falling over packages, &c. on station platforms	—	48	—	1	—	—	—	49
From falling off platforms	2	41	—	3	—	—	2	44
By other accidents	—	66	—	—	—	—	—	66
TOTAL	12	331	—	5	—	—	12	336
SERVANTS :—								
Whilst loading, unloading, or sheeting waggons	4	1,377	—	13	1	3	5	1,393
Whilst moving or carrying goods in warehouses, &c.	—	388	—	3	—	—	—	391
Whilst working at cranes or capstans	2	177	1	3	—	1	3	181
By the falling of waggon-doors, lamps, bales of goods, &c.	1	482	—	4	—	—	1	486
From falling off, or when getting on or off, stationary engines or vehicles	1	375	—	7	—	2	1	384
From falling off platforms, ladders, scaffolds, &c.	14	397	1	9	1	1	16	407
By stumbling whilst walking on the line or platforms	—	433	—	—	1	—	1	433
Whilst attending to stationary engines in sheds	—	336	—	1	—	—	—	337
By being trampled on or kicked by horses	1	82	—	2	—	—	1	84
Whilst working on the line or in sidings	7	818	1	2	—	1	8	821
Miscellaneous	5	587	—	5	—	1	5	593
TOTAL	35	5,452	3	49	3	9	41	5,510
PERSONS ON BUSINESS AT STATIONS AND OTHERS	20	138	—	6	1	1	21	145
SUMMARY :—								
Passengers	12	331	—	5	—	—	12	336
Servants	35	5,452	3	49	3	9	41	5,510
Persons on business at stations and others	20	138	—	6	1	1	21	145
TOTAL ALL CLASSES	67	5,921	3	60	4	10	74	5,991

Board of Trade,
9th March 1893.

COURTENAY BOYLE.

REPORTS TO THE BOARD OF TRADE BY INSPECTING OFFICERS OF THE RAILWAY DEPARTMENT UPON CERTAIN ACCIDENTS WHICH HAVE BEEN INQUIRED INTO.

GLASGOW AND SOUTH-WESTERN: Page

Major Marindin's report on the collision that occurred on the 30th November at St. Enoch terminal station, between a passenger train and the buffer-stops - - - - - - 23

GREAT EASTERN:

Major-General Hutchinson's report on the collision that occurred on the 14th June at Bishopsgate station, between two passenger trains - - 25

Major Yorke's report on the collision that occurred on the 18th June at Forest Gate station, between a passenger train and the buffer-stops - 34

Major Marindin's report on the collision that occurred on the 1st August at Stepney, between two passenger trains - - - - 38

Major Yorke's report on the collision that occurred on the 21st August at Leman Street, between a light-engine and a passenger train - 44

Major Yorke's report on the accident that occurred on the 7th September at Haughley junction, when a passenger train left the rails - 48

Major-General Hutchinson's report on the collision that occurred on the 16th October at Forest Gate station, between a passenger train and the buffer-stops - - - - - - 55

GREAT NORTHERN AND LONDON AND NORTH-WESTERN:

Major Marindin's report on the accident that occurred on the 25th July near Melton Mowbray station, when a passenger train left the rails - 58

GREAT WESTERN:

Major Yorke's report on the collision that occurred on the 12th May at Buckfastleigh, between a passenger train and a goods train - 68

Major Yorke's report on the accident that occurred on the 12th September between Devonport and Saltash, when a ballast train left the rails - - - - - - - 72

Major Yorke's report on the collision that occurred on the 14th November at Hatton station, between a light-engine and a passenger train - - - - - - - 76

HULL, BARNSLEY, AND WEST RIDING:

Major Yorke's report on the collision that occurred on the 27th May at Springhead, near Hull, between two goods engines - - 80

LANCASHIRE AND YORKSHIRE:

Major Yorke's report on the collision that occurred on the 11th August at Sandhills station, between two passenger trains - - - 83

Major-General Hutchinson's report on the collision that occurred on the 8th December at Philips Park junction, between a passenger train and a goods train - - - - - - 90

LANCASHIRE AND YORKSHIRE AND LONDON AND NORTH-WESTERN:

Major-General Hutchinson's report on the collision that occurred on the 23rd July at Preston station, between two passenger trains - - 95

LONDON AND NORTH-WESTERN:

Major Marindin's report on the accident that occurred on the 18th April at Hampstead Heath station, when eight persons were killed and 14 injured in a crush that took place at the foot of the staircase leading to the up platform - 99

Major Marindin's report on the collision that occurred on the 27th May at Derby junction, between two passenger trains - - - 116

Major Yorke's report on the collision that occurred on the 31st July at Penmaenmawr, between a goods and cattle train and a passenger train - - - - - - 127

LONDON AND SOUTH-WESTERN: Page

Major Yorke's report on the collision that occurred on the 26th May at Southampton station, between a passenger train and a bogie carriage which was standing at the buffer-stops - 135

Major Marindin's report on the collision that occurred on the 20th August at Ludgate junction, near Clapham Junction station, between a passenger train and an empty carriage train - 137

LONDON, CHATHAM, AND DOVER:

Major Marindin's report on the collision that occurred on the 30th June at Sheerness Dockyard station, between a passenger train and the buffer-stops - - - - - - 148

MIDLAND:

Major-General Hutchinson's report on the collision that occurred on the 14th June at Leeds station, between a passenger train and two unattached engines - - - - - - - 152

Major-General Hutchinson's report on the collision that occurred on the 9th June at Esholt junction, between two passenger trains - - - 158

Major Yorke's report on the collision that occurred on the 31st October at Kentish Town station, between two passenger trains - - 166

Major Marindin's report on the collision that occurred on the 8th December at Watling Street signal-cabin, near Child's Hill, between two goods trains - - - - - - 172

NORTH BRITISH:

Major Marindin's report on the collision that occurred on the 6th August at Kilsyth old station, between a passenger train from which the engine had been detached and the buffer-stop - - - - - - - 180

Major Marindin's report on the accident that occurred on the 31st August near Balfron, when a passenger train left the rails - - - 184

Major Marindin's report on the collision that occurred on the 26th December at Polmont, between a passenger train and a goods train - 188

NORTH-EASTERN:

Major Yorke's report on the collision that occurred on the 22nd September at Newcastle Central station, between a passenger train and the buffer-stops - - - - - - 192

Major Marindin's report on the collision that occurred on the 2nd November at Manor House signal-cabin, near Thirsk, between a passenger train and a goods train - - - - 196

NORTH STAFFORDSHIRE:

Major Marindin's report on the collision that occurred on the 27th July at Uttoxeter station, between an engine and tender and a loaded passenger carriage - - - - - 217

SOUTH-EASTERN:

Major-General Hutchinson's report on the collision that occurred on the 24th November near London Bridge station, between two passenger trains - 220

Major-General Hutchinson's report on the accident that occurred on the 4th December to a passenger when leaning out of the window of a carriage of an express train at Shakespeare tunnel, near Dover - - - - - 225

WEYMOUTH AND PORTLAND:

Major-General Hutchinson's report on the accident that occurred on the 6th November near the Weymouth station end of the Backwater viaduct, when a passenger train left the rails - - 226

WIRRAL AND MERSEY:

Major Yorke's report on the collision that occurred on the 1st November at Park (Joint) station, Birkenhead, between a light-engine and a passenger train - - - - - 229

For other Reports of Inquiries into Accidents which have occurred during the twelve months, *see* [C.—6771.]

The report and correspondence on the accident to a mixed train at Auchnashellach on the Highland Railway will be presented as a separate paper.

GLASGOW AND SOUTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
December 15th, 1892.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 2nd instant, the result of my enquiry into the circumstances attending a collision which occurred on the 30th ultimo at St. Enoch terminal station, on the Glasgow and South-Western Railway.

In this case the 8.15 a.m. up passenger train from Potterhill, consisting of tank-engine, running bunker in front, and five passenger vehicles, fitted throughout with the Westinghouse brake, when entering St. Enoch station at 8.47 a.m. on No. 1 line, overran the proper stopping place, and came slightly into collision with the buffer-stops. It is stated that seven passengers were injured, but that none of the injuries were serious.

The buffer-beam of the stops was very slightly cracked, and the damages to the rolling-stock were as follows:—

Engine No. 1.—Two cast-iron buffer-guides broken.

Third-class brake-carriage No. 206.—Buffer-spindle guide broken, buffer-beam damaged, and body shifted.

Description.

At St. Enoch station, which lies due east and west, there are six platform lines, all signalled for arrival and departure, No. 1 line being on the south or proper arrival side.

The line, approaching the station from the south, curves sharply to the left after crossing the River Clyde, but is straight inside the station.

The signal-cabin is on the north side of the railway, about 30 yards outside the outer end of the platform, and there is a bridge carrying the directing-signals for the different platform lines about 50 yards west of the cabin.

There are up home and up distant signals, and on the home-signal post is a "caution" arm, which is kept at danger unless the platform line on to which an incoming train is to be run is clear up to the buffer-stops.

The line is level from the distant-signal to near the signal-cabin, then rises on a gradient of 1 in 400 for 36 yards, then falls on a gradient of 1 in 500 for 60 yards, is then level for about 110 yards to the end of the station roof, whence it falls on a gradient of 1 in 220 for 130 yards to the buffer-stops.

The following distances outwards, or eastwards, from the buffer-stops, should be noted:—

To outer end of station roof	130 yards.
„ bridge carrying directing-signals	280 „
„ outer end of platform	300 „
„ signal-cabin	330 „
„ post carrying up home-signal and caution-signal	465 „
„ up distant-signal	685 „

The following is an extract from Rule No. 293, in the Company's book of Rules and Regulations:—

"* * * Engine-drivers must always enter such (terminal) stations, or a dead-end bay at any station, at such a speed as to enable them to stop the train at the proper place by the application of the ordinary hand-brake only, and guards must watch the speed of trains and assist engine-drivers by the use of the hand-brake when necessary."

Evidence.

Alexander Muir states: I have been about nine years in the service altogether, but was away at other work for three years, and returned to railway service one year and two months ago. All my railway service has been that of a signalman. I have been working in St. Enoch station cabin since February 1892. On the 30th November I came on duty at 6 a.m. for eight hours. The following are the block-signals received by me from Clyde junction for the 8.15 a.m. train from Potterhill:—

Warning signal received	8.43 a.m.
I accepted this signal at once.	
Departure signal received, but not entered.	
Train passed	8.45¼ „

It passed me at a speed, as near as I can calculate, of between 12 and 15 miles an hour. I cannot state whether steam was on or off, nor can I speak as to the position of the brakes. There was nothing unusual in the speed of the train, which is due in at 8.45 a.m. Immediately it was warned I lowered the signals for it to run into No. 1 dock line, which is the usual line for it to enter. I pulled over Nos. 11 and 10 lock-bars; No. 7, the directing-signal; No. 6, the home-signal; No. 5, the caution-signal; and No. 4, the distant-signal. I did not see or hear any collision.

James Scott states: I have been 15 years in the service, and a driver for about two years. During the whole of my service I have been driving in and out of St. Enoch station, which I know well. On the 30th November I came on duty at St. Enoch at 6.30 a.m. to work till 5.30 p.m., at which hour I had left duty the previous evening. My engine, No. 1, is an eight-wheeled tank-engine, with a trailing bogie, and leading and driving wheels coupled. It is fitted with a Westinghouse brake, which works blocks on the four coupled wheels. I took the 7.37 a.m. train from St. Enoch to Potterhill, arriving about 8.6 or 8.7, and started back with the same train at 8.17 a.m., two minutes late. I was running bunker in front on the return journey. There were five vehicles in the train, and the Westinghouse brake was working throughout. I tested the brake before starting, and used it at the five intermediate stops, where it acted well. On approaching St. Enoch I found the signals all off for me to enter No. 1 dock line, which is the one I usually enter with this train. I shut off steam when approaching Clyde Bridge junction, and passed St. Enoch distant-signal at a speed of about 15 miles an hour. Between Clyde junction cabin and the caution-signal I applied the Westinghouse brake slightly, reducing the pressure from 85 lbs. to perhaps 77 lbs. My fireman at the same time applied the hand-brake. I then released the Westinghouse brake. I think my speed was about 10 miles an hour when passing the home-signal. When I came to the end of the platform the speed was from six to eight miles an hour, and when about the centre of the platform I applied the Westinghouse brake again slightly to bring the train to a stand, making a certain allowance so that the train might stop an engine-length forward. The wheels skidded, and the train did not stop, so then I applied the brake at full power when about three carriage-lengths from the buffer-stops. Owing to the greasy state of the rails the wheels continued to skid, and we struck the buffer-stops at a speed of about three miles an hour. I never felt the shock at all, and the only damage to my engine was to the buffers. It was a frosty morning. The rails outside the station were dry, but inside the station they were greasy and in a bad condition for stopping. I think I must have been coming in a little faster than at hand-brake speed, as laid down in Rule 293, but not as fast as I sometimes do. I made some allowance for the greasy rails, but apparently not quite enough. My engine did not rebound at all.

John Patterson states: I have been one year eight months in the service, and a fireman for six months. On the 30th November I was firing for driver Scott. I have heard my driver's evidence read over, and it is correct. I was not on the engine when the collision occurred, as I had stepped off to change the lamp as usual. When I stepped off, about two carriage-lengths from the buffer-stops, I thought the train would stop all right. My driver told me to put on my hand-brake when we were near the home-signal, "owing to the slippery state of the rails." My driver first applied the Westinghouse brake when near the home-signal, and that is where he told me to put on my hand-brake.

James Presslie states: I have been over four years in the service as a guard, 2¼ years as guard in charge. On the 30th November I came on duty at 4.45 a.m., after 10½ hours' rest, to work till 10.30 a.m., and then to resume duty again at 4 p.m. to work till 6.30 p.m. My first duty was to take an empty carriage train to Shields Road, leaving St. Enoch at 5.10 a.m.; leaving Shields Road at 5.25 with a workmen's train for Springburn; leaving Springburn at 5.50 for Paisley Canal with another workmen's train; leaving Paisley Canal at 6.35 a.m. with another workmen's train for St. Enoch, arriving there at 6.55. At 7.37 a.m. I went as guard with the train for Potterhill, arriving there at 8.6 a.m. We started back with the same train at 8.17 a.m., two minutes late, and arrived at St. Enoch at 8.46 a.m., one minute late. The train on leaving Potterhill was made up as follows:—Tank-engine, running bunker first, one third-class brake, one composite, one first-class, one third-class, and one third-class brake, in which I was riding. The train was fitted throughout with the Westinghouse brake in good order. After leaving Main Street station the pressure shown on my gauge was 80 lbs. I cannot say when my driver shut off steam. The first time the Westinghouse brake was applied was when approaching the signal-bridge carrying the directing-signals, between the home-signal and this bridge, and it was soon after released again. I saw myself that the signals were right for us to enter No. 1 dock line. Our speed on entering the station was the ordinary speed. I should say that at the home-signal we were running at between 12 and 14 miles an hour. I put my brake on, as I always do, and it was taking effect when we were passing the home-signal. I did not release it again. The speed was gradually reduced, the Westinghouse brake being applied again when my van was about passing the third roof-girder. The collision took me quite by surprise. I did not anticipate it in the least, thinking the train was pulling up all right. There was a slight rebound. Just after the collision I looked at the Westinghouse brake gauge and the pressure shown was 60 lbs., showing a reduction of 20 lbs., which would cause the brake to be full on. I was not at all hurt. The train was well filled. I only saw two persons who were injured. One was cut on the cheek and forehead, and the other seemed to be in a sort of a faint.

Robert McCartney states: I have been 17 years in the service, and am foreman porter at St. Enoch station. On the 30th November I was in charge of No. 1 platform when the collision occurred. I was standing about 130 to 150 yards from the buffer-stops when the engine of the 8.15 a.m. from Potterhill passed me. I did not observe whether the brake was on or off, but the speed was certainly not higher than usual. It is difficult to estimate the speed, but it was between four and eight miles an hour, I should say. After the engine passed me I noticed that the train was not pulling up as it should, and when the engine struck the buffer-stops it was running at perhaps rather less than four miles an hour. I went first to the guard's van. He told me his brake was on, and I saw that it was tightly screwed up. When the engine passed me I had no apprehension of a collision. I saw three persons who were injured, and I took them to the station-master's office. I did not speak to the driver at all.

Conclusion.

This slight accident presents the usual features of buffer-stop collisions, which are of far too frequent occurrence, considering how easily they may be prevented with proper care, and under proper regulations.

It is clear that the driver of the 8.15 a.m. up train from Potterhill was approaching the station at a speed which cannot be called excessive, and that he had his train—which was a light train fitted throughout with the Westinghouse brake—under such control that he could have brought it to a stand by the use of the continuous-brake, when only half way along the platform, if it had been necessary to do so. He miscalculated his speed, however, and did not make sufficient allowance for the rails being in a very greasy state, and, running too far before making use of his brake, was unable to stop at the proper stopping place about 10 yards from the buffer-stop. The hand-brake on the engine, and that on the rear third-class brake-carriage, had been tightly applied outside the station, and no person except the driver, who had at the time been on duty for $2\frac{1}{4}$ hours, is in any way to blame in the matter.

The driver candidly admits that he must have been entering the station at rather more than the hand-brake speed enjoined by Rule 293, but states that he sometimes runs in faster, which, judging from what I have observed, and from what I have been informed, is doubtless quite true, both as regards himself and other drivers.

The fact is, and it is idle to deny it, that drivers, having at their command a continuous-brake in which they have confidence, do habitually disregard the rule, without being checked for doing so, and enter terminal stations at such rates of speed that they cannot stop by the use of hand-brakes only, and that in such cases a very trifling miscalculation of speed, or some unusual greasiness of a rail, will cause collisions such as this to occur.

It has been urged over and over again by the inspecting officers that the only way to guard against such collisions is to order drivers not to use their continuous-brakes to stop with inside terminal stations, unless an emergency should arise, when they would have a great reserve of power to fall back upon; and until this is done I believe that drivers will continue to act as they have hitherto acted, and that these buffer-stop accidents will occur whenever a driver makes a slight mistake.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

(Signed) F. A. Marindin,
Major, R.E.

Printed copies of the above Report were sent to the Company on the 3rd January.

GREAT EASTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
30th June 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 14th instant, the result of my enquiry into the causes of the very serious collision which occurred on the 14th instant at Bishopsgate station, London, on the Great Eastern Railway.

In this case, while the 6.4 a.m. up workmen's train from St. James' Street station, Walthamstow, for Liverpool Street station (where it was due at 6.28 a.m.) was standing on the up suburban line at Bishopsgate station, which it was due to leave at 6 26 a.m., it was run into at the rear by the 5.56 a.m. up workmen's train from Enfield Town station due to leave Bishopsgate station at 6.32 a.m. and to arrive at Liverpool Street at 6.34 a.m.

The result of the collision was disastrous so far as regards the Walthamstow train in which five persons were fatally injured, three being killed on the spot, and two others dying in hospital. Fifty-two passengers (nearly all in the Walthamstow train) are returned as having been injured, one of whom had his leg broken.

The driver, fireman, and both guards of the Enfield train were injured.

The Walthamstow train consisted of a six-wheel coupled tank-engine running coal-bunker in front, and 15 vehicles, the first and last being brake carriages, fitted throughout with the Westinghouse automatic brake, and in it the two rear vehicles were broken up and several others were damaged.

In the Enfield train—which consisted of an eight-wheeled, four wheels coupled, tank-engine running coal-bunker in front, and 15 vehicles of which the first and last but one were brake carriages with a guard in each brake compartment, the whole train being fitted with the Westinghouse automatic brake—the coal-bunker of the engine was damaged.

A complete list of damage is given in an Appendix.

Description.

Bishopsgate station is situated at the foot of an incline which commences near the west end of Bethnal Green station and falls on gradients of 1 in 65, 1 in 76, and 1 in 69 for about 31 chains, and terminates about 9½ chains east of the east end of Bishopsgate station, whence through the station the line is nearly level.

Two new lines, called the up and down suburban lines, on the north side of the local and main lines, were opened for traffic about 15 months since, and in consequence of the goods yard being carried on girders over the suburban lines along the site of the station and for about 180 yards to the east of it, the platforms are more or less dark, and gas lamps are kept constantly alight upon them.

The suburban line platforms are approached on easy curves and under the most favourable circumstances it would have been possible for the driver of the Enfield train to have seen the rear vehicle of the Walthamstow train when only about 150 yards from it. In consequence, however, of the dim light where the tail of the train was standing, about 55 yards inside the east end of the platform, this distance of 150 yards would be very considerably reduced.

The signal cabin next east from Bishopsgate is called the middle cabin and is about 310 yards east of the east end of the platform; it is a raised cabin in the interval between the down local and up suburban lines; the signalman in it is entrusted with the working of the suburban and local lines and has charge of four block instruments, of two train describers for advising Liverpool Street station of the nature of the trains which are approaching it, and of 13 levers for working points and signals.

The signal cabin for the suburban lines at Bishopsgate station is placed on the down platform about 35 yards from the east end of it; its floor is raised slightly above the level of the platform; providing no down train is standing at the platform the signalman can see a train standing at any part of the up platform. The signalman in this cabin has only the up and down suburban lines to attend to and has charge of two block instruments and 15 levers for working points and signals. The up home-signal is situated about 85 yards east of the cabin, and the up distant-signal (a lower arm on the same post which carries the middle cabin up home-signal) is about 290 yards from it. The up home-signal at the middle cabin is also controlled by a lever in the Bishopsgate cabin. The up starting-signal for the suburban line is at the west end of the platform, about 175 yards from the signal-cabin, and is controlled from the Liverpool Street cabin, from which it is not lowered until a train can be admitted into that station.

The traffic is worked, both as regards the block-signals and outdoor-signals, on the system that when no train is known to be in a section, and when the section in advance is known to be clear, the block instruments are kept at "Line clear," and the outdoor-signals are kept lowered.

In consequence of the bad light in Bishopsgate suburban line station a clearance bar has been placed a short distance inside the up starting-signal to prevent the up home-signal being lowered while any vehicle is standing on it. There is also a rail contact a train's length in advance of the up starting-signal; this rings a bell in the cabin until a train has passed it.

The collision took place about 6.31 a.m. at a spot about 15 yards west of the Bishopsgate north signal-cabin, or about 100 yards inside the up home-signal of that cabin.

Evidence.

1. *William Harwood*, driver; 22 years' service, four years driver.—I have been working on the suburban line with the same train which met with the collision for the last fortnight, and frequently before that, and I am perfectly well acquainted with the suburban lines between Bethnal Green and Liverpool Street. I commenced work at 3.5 a.m. on the 14th June to work on till 1.22 p.m., and I had left work on the 13th June at 1.22 p.m. I was driver of the 5.56 a.m. up workmen's train from Enfield for Liverpool Street on the 14th. My engine was No. 671, an eight-wheeled tank-engine running bunker first, with four wheels coupled in the centre and radial axles front and rear. My fireman was Edward Saville who has been with me for about three months. My train consisted of 15 vehicles and was fitted throughout with the Westinghouse brake, which applied to the four coupled wheels of the engine. The brake was in good working order, and the air-pressure was about 70 lbs., which is about the maximum I use. We left Enfield Town at right time and kept time all the way. The last stop before the collision was at Bethnal Green, which we left at 6.29 a.m. having next to stop at Bishopsgate. I was standing on the left side of the engine as it was running, and my fireman was on the right side. After leaving Bethnal Green the first signals I passed were the middle cabin signals, distant and home, and these were both off when I sighted them. Underneath the middle cabin up home-signal is Bishopsgate north distant-signal, which was also off. The next signal I sight is the north cabin Bishopsgate up home-signal, and this I saw from the overbridge on the Liverpool Street side of the tunnel.

This signal was also off. At the time I sighted this home-signal I do not think the speed exceeded 20 miles an hour, steam having been shut off before I came to the middle box, and the speed was much the same on passing the home-signal, the brake not having yet been applied. Just on coming to the ramp at the end of the up platform I saw the end of a train standing on the up platform line. On seeing this I at once applied the brake with full force, and it immediately took effect. I think the speed had been reduced to about 10 miles an hour when the engine struck the last vehicle of the standing train. I think my engine and train went forward about a carriage length after striking the last vehicle. The roof of the last carriage but one came over the guard's brake on to the engine. The frame of the brake-van at the tail of the train was much broken up. I was bruised on the left arm and jaw by something striking me, but I was not rendered insensible. The collision occurred about 6.32. The morning was fine, but dull. The gas lamps were all alight on the platform. I passed a train on the down suburban line near to the Bethnal Green down home-signal, that is, between this down home-signal and the middle box, and I passed no other train on the down suburban line between that and Bishopsgate. There was no light showing on the tail of the train into which I ran. I believe I was the first to put the brake on on seeing the train, there having been no indication of its having been put on before this by either of the guards. I had no time to reverse the engine. The fireman did not attempt to use the hand-brake, and there was no time to open the sand-valve. I got no indication either by shouting or by seeing any signal given of the fact of a train standing at the platform. I am sure that the signalman at Bishopsgate north cabin was not holding out a red flag or I should have seen him.

2. *Edward Saville*, fireman; eight years' service, 3½ years fireman.—I have been Harwood's fireman about two months. I had been working on the up suburban line for a week on the present occasion, and frequently on previous occasions. I have a perfect knowledge of the signals between Bethnal Green and Liverpool Street. I was fireman of the 5.56 a.m. train from Enfield Town for Liverpool Street on the 14th June, and my place was on the 6-ft. side of the engine, which was running bunker first. Everything went right on the journey as far as Bethnal Green. The brake acted properly at all the previous stops. The air pressure was showing between 70 and 75 lbs. I had looked at the gauge just after leaving Bethnal Green. The up distant and up home-signals for the middle box were both off. The up distant-signal for Bishopsgate, below the middle box home-signal, was also off, and the next signal is the up home-signal for Bishopsgate, which I saw from about opposite to the East London junction signal box, and this was off too. I kept my eye upon it until I passed it. The speed, up to the time of passing the home-signal, was about 20 miles an hour, or rather more, but we were prepared to stop at Bishopsgate station. I think we had got to about the end of the up platform when Harwood and I saw the train standing in the station about the same time. I called out first and said "Wo!" and just at the same time the driver applied the brake. The brake appeared to act well, and when we struck the rear vehicle of the train the speed had been reduced to about half what it had been previously. The engine went forward a few yards after striking the train; some of the framework of the train made its way over the bunker and knocked the cab of our engine down. I was knocked down and bruised and shaken. Neither Harwood nor myself tried to jump off the engine, having no time to do so. I had no time to put on my hand-brake. I opened the sand-valve which delivered sand in the front of the engine as it was running. The driver had not time to reverse. The driver had shut off steam before we reached the middle box. We passed a train on the down suburban line between Bethnal Green and the middle box, and no train after that. I cannot say what the train we passed was. The morning was fine but dull. The rails were dry, and as far as my judgment goes the brake acted well. I saw nothing of the signalman at Bishopsgate nor of anyone else warning us that there was a train at the platform. The first thing I saw was the big blackish end of the brake. Had there been a red light on the brake we should have seen it earlier. No wheels of the engine left the rails.

3. *George Williams*, guard; between 18 and 19 years' service, 16 years a guard.—I am very well acquainted with the suburban line between Bethnal Green and Liverpool Street. On the 14th June I commenced work at 4 a.m. to remain until 1.30 p.m., having left work on the 13th at 1.36 p.m. I was head guard of the 5.56 a.m. up workmen's train from Enfield Town for Liverpool Street, and I was riding in the front brake-carriage next the engine—the brake compartment being in front of the carriage. The train consisted of 15 vehicles, and was formed as follows:—one third-class brake, three third-class carriages, three firsts, five seconds, one third, one third-class brake, one third. The carriages were all four-wheeled. I had command of the Westinghouse brake in the brake compartment. The only man in the brake compartment with me was a company's servant—an omnibus driver. The journey was performed without any hitch from Enfield to Bethnal Green, and we left Bethnal Green at right time, viz., 6.28 a.m., the next stop being Bishopsgate. I saw all the signals after leaving Bethnal Green up to the up home-signal for Bishopsgate, and these signals—both distant and home—were all off. The driver shut off steam about half-way between Bethnal Green and the middle box, and I think the speed at the Bishopsgate up home-signal was between 30 and 35 miles an hour—not too high a speed to prevent our stopping at the proper place at the Bishopsgate platform. Directly after I had passed the Bishopsgate up home signal my attention was attracted by seeing passengers jumping from the carriages of the train standing at the platform. I saw this from the window on the left side of the brake compartment, and I at once applied the Westinghouse brake. The pressure in the gauge glass showed 75 lbs., and I think I turned the tap at about the Bethnal Green end of the up platform. I think I must have put it on at about the same time as the driver. I had no time to warn the driver or to call to him after seeing the passengers jumping. I got no warning from anybody to indicate that a train was standing at the platform. I did not see the signalman in the Bishopsgate cabin as I passed. The brake had acted before the collision took place, but what the speed was reduced to I cannot say. When the collision occurred I was holding on to the brake-wheel, and the effect of the collision was to throw me from the wheel at the front of the compartment to the back of the compartment. After striking the rear vehicle of the Walthamstow train, I think the engine must have gone forward two carriage lengths crashing into the train. All the vehicles in my train kept the rails, and there was no telescoping in the train. I was shaken and bruised, but had no bones broken. No serious damage was done to the carriage I was in. I think we passed a down train on the suburban line about half-way between Bethnal Green and Bishopsgate, but I cannot say what train it was. The morning was dull but fine. I think the speed at the Bishopsgate home-signal was about the usual speed, though I may have slightly over-rated its amount.

4. *Arthur Edward Westley*, acting guard, two years and two months' service, six weeks an acting guard.—I have been accustomed to work on the suburban line between Bethnal Green and Liverpool Street for the last three weeks, and I am perfectly

acquainted with the signals. I commenced work on the 14th June at 3.50 a.m. to sign off at 1.36 p.m., having left work the previous day at 1.6 p.m. I was the rear guard of the 5.56 a.m. up workmen's train from Enfield to Liverpool Street on the 14th June. I was riding in the last carriage but one, which was a brake-carriage, and the compartment I was in was the rear compartment of the carriage. A passenger jumped into my brake at Cambridge Heath, but I did not turn him out at Bethnal Green as the train was very crowded. I had command of the Westinghouse brake in my compartment. I did not observe what air-pressure was being shown in the gauge. The journey proceeded without anything unusual as far as Bethnal Green. After leaving Bethnal Green I saw myself all the signals off up to and including the Bishopsgate up home-signal, and I was not aware that anything was wrong until I felt the brake suddenly applied. I think when I felt this the brake compartment I was in was close against the home-signal. I could not say what the speed was, but it was nothing unusual. The speed was reduced before I felt the shock of the collision, which threw me across the brake, and I believe the train stopped nearly dead when it occurred. I was able to get out immediately, and I found that no vehicles in my train were off the rails, and I did not notice that any passengers were hurt in my train. I passed a train on the down suburban line before I came to the middle box. I do not know what this was. I received a cut on the forehead.

5. *Sidney Woodcock*, driver; 26 years' service, 13 years driver.—I commenced work on the 14th instant at 4.20 a.m., to sign off at 2.3 p.m., having left work the previous day at 12.30 p.m. I am well acquainted with the suburban line between Bethnal Green and Liverpool Street, and have been accustomed to work over it since it was opened about 14 months since. I was driver of the 6.4 a.m. up workmen's train from St. James' Street, Walthamstow for Liverpool Street, and the train consisted of a six-wheeled coupled tank-engine running bunker first, and 15 vehicles of which two were brake-carriages. The train was fitted throughout with the Westinghouse continuous brake applying to all the engine wheels. We left St. James' Street three minutes late waiting for passengers, and the journey went all right as far as Bishopsgate, where we arrived at 6.25 a.m., about right time, having made up the three minutes in running. The middle box signals were at danger while I was standing at Bethnal Green, but after I had left the station they were taken off as I approached them. The distant-signal of the north box at Bishopsgate was at danger when I passed it, but the up home-signal was off, which I saw as soon as I turned the curve, and I then ran into Bishopsgate station. I saw nothing of the signalman as I ran into the station, nor was there any train standing on the down suburban line. I ran up to about 8 feet inside the up starting-signal at Bishopsgate. I was kept standing there waiting for the starting-signal to be lowered for five minutes before I heard any alarm. The first thing I knew of anything being wrong was feeling the shock on the engine. The shock moved the engine forward about 15 feet, the fireman and myself being knocked from one side to the other of the foot-plate. At the time the shock was received the brakes were all off, I having taken them off in preparation for starting when the signal should be lowered. Previous to the shock I had neither seen nor heard anything, either by shouting or otherwise, of the coming train. Without knowing that anything was foul of the down line, but feeling that there might be, and knowing that the 6.29 a.m. down carriage train from Liverpool Street was approaching Bishopsgate station, I and my fireman jumped off the engine and ran towards Liverpool Street and stopped the train almost opposite to the engine of my train. I afterwards found that the whole of my train had suffered more or less, and that some of the rear carriages were completely wrecked; also that the down line was fouled by some of the débris. I think the collision occurred between 6.30 and 6.31 a.m. I did not notice any down train arrive at the station after I had arrived, but there should have been one leaving Liverpool Street at 6.26 a.m. for Enfield. I am quite confident that there was no train standing on the down suburban line at Bishopsgate when I ran into the station so as to obstruct the signalman's view of my train. On seeing the up distant-signal from Bishopsgate at danger I did not whistle. I passed a train after leaving Bethnal Green between Bethnal Green and the middle box, which train I believe was the 6.22 a.m. train from Liverpool Street, but this was so far clear of Bishopsgate, that I could see Bishopsgate up starting-signal when running into the station, otherwise it would have obstructed my view of it.

6. *Arthur James Airey*, fireman; eight years' service, 3¼ years fireman.—I have been fireman with Woodcock for about two years and two months, and I was with him on the morning of the 14th June. my hours being the same as his. I started from Walthamstow with the 6.4 a.m. train from St. James' Street, my place on the engine being on the 6-ft. side as the engine was running, bunker first. Nothing unusual occurred on the journey until after we had arrived at Bishopsgate. The only signal against us between Bethnal Green and Bishopsgate was the Bishopsgate station up distant-signal. The station home-signal was off, but the starting-signal was at danger. Before running into Bishopsgate station I saw the starting-signal at danger. No down train was standing in the station when we arrived; but one ran past us into the station just after we had stopped, but whether it stopped at Bishopsgate or not I cannot say. As our engine passed the Bishopsgate signal-cabin there was nothing to prevent my seeing it, but I cannot say whether or not I looked at it. I think we had been standing in the station a few minutes waiting for the starting-signal to be lowered before anything happened, and then the first thing we felt was the collision at the rear of the train. There had been no shouting or warning to attract our attention before this occurred. The force of the collision knocked the engine forward about its own length. The brakes were all off at this time ready for the train to start. On the collision occurring we were knocked about on the foot-plate, but not hurt. When we recovered ourselves we heard a train approaching on the down suburban line, and we ran forward and stopped it after the engine had passed our engine about two or three carriage lengths. We did this thinking something might be foul of the down line, as afterwards turned out to be the case.

7. *Frederick Alvin*, guard; 22½ years' service, 13 years' guard.—I commenced work on the 14th instant at 5 a.m. to sign off at 2.5 p.m., having signed off on the 13th instant at 2.35 p.m. I am well acquainted with the line between Bethnal Green and Liverpool Street, and am principally employed on the suburban or local service. I was head guard on the 14th instant of the 6.4 a.m. up workmen's train from St. James' Street. I was next the engine in the front vehicle, which is a brake-carriage, the brake compartment being next the engine; from it I could apply the Westinghouse brake. The train consisted of 15 coaches, made up as follows:—One brake-carriage, one first-class, two second-class, 10 third-class, one brake-carriage. None of the vehicles were six-wheeled carriages. We left St. James' Street three minutes late. We had been one minute late in starting from Wood Street as an empty train, and then were delayed two miuutes by passengers at St. James' Street. We had picked up these three minutes, and left Bethnal Green at right time, viz., 6.22. The train was not full, but I think there may have been 600 passengers in it on leaving Bethnal Green. A great many of these had left the train at

Bishopsgate before the collision. The only signal against us after leaving Bethnal Green was the Bishopsgate up distant-signal. I saw the Bishopsgate up home-signal off soon after passing the middle-box, and I caught sight of the Bishopsgate up starting-signal at danger as I was running into the platform. I could hardly have seen this signal had there been a train standing at the down platform, but there was no train standing at the down platform as we ran into Bishopsgate. The train drew up to the starting-signal. I cannot say whether I had passed any down train on the suburban line between Bethnal Green and Bishopsgate, but the 6.26 a.m. train from Liverpool Street for Enfield passed us when we had been standing, I should think, about two minutes at the station. This train ran through Bishopsgate without stopping. We had been standing at Bishopsgate about five minutes, after our arrival at 6.26 a.m., when without any warning, the collision occurred—the first I knew of it being the moving forward of my train about a carriage length. At the time this occurred I was standing on the platform opposite the brake door watching the starting-signal. I heard no shouting at the rear of the train or anything to indicate what was about to happen. No couplings were severed by the collision. The first carriage I observed off the rails was the 13th from the engine, but the 14th and 15th were more or less broken up, both in frames and bodies, and some of the wreckage of these carriages was foul of the down line. The collision occurred at about 6.31 a.m. I did not happen to notice either the signalman or signal-cabin as I ran into the station, as I was looking out on the platform side, but I feel sure there was nothing to prevent the signalman seeing my train or my seeing the signalman as my train passed the cabin. The automatic-brake had been taken off my train before it was run into. I could not say in which of the two rear vehicles the deceased were travelling. Two passengers got into my brake compartment at Clapton, the front part of the train being very full.

8. *Frederick Howard*, second guard; 13½ years' service, six years guard.—I am well acquainted with the signals between Bethnal Green and Liverpool Street. I was one of the guards of the 6.4 a.m. up workmen's train from St. James' Street for Liverpool Street on the 14th June. I came on duty at 4.50 a.m. to sign off at 2.35 p.m., having left work the previous day about noon. I was riding in the rear compartment of the last vehicle, from which I could, if necessary, apply the Westinghouse brake. Nothing unusual occurred on the journey up to our stopping at Bishopsgate station, where we arrived at about right time. The only signal against us after leaving Bethnal Green was the Bishopsgate up distant-signal. The station work had all been completed at Bishopsgate, and I had shut the doors and returned to my brake waiting for the signal to start. After standing about five minutes I was looking towards the up starting-signal when I heard the sound of an approaching train, and I immediately turned round to see whether it was approaching on our line or on the local line, and I saw that it was on the suburban line. At this time the approaching train was about two carriage lengths on the Bethnal Green side of the home-signal, and the rear vehicle of my train was some yards on the Liverpool Street side of the signal cabin. I was standing on the step of the brake. There was nothing at this time to indicate that the driver of the approaching train saw my train. On seeing the engine I hesitated a moment thinking the train would stop at the home-signal, but seeing it did not do so I shouted to the passengers in my train, "My God! there is a train running in at the back of us," and I then ran back towards the approaching train. I had got to within 12 yards of the end of the platform when the engine of the Enfield train passed me. Before the engine passed me I saw that the driver was trying to pull his train up. I think the speed of the train when the engine passed me was 10 to 12 miles an hour. When my train ran into Bishopsgate station there was no train standing on the down suburban line at the station, but we had passed a down train about the middle box, and a down train ran through the station without stopping at it about two minutes after we had stopped. There was nothing to prevent the Bishopsgate signalman seeing my train as it ran past the cabin before stopping at Bishopsgate. I did not know whether or not my train was protected by the up home-signal being put to danger, as this signal is not visible from the up platform. I have no notion why the Bishopsgate signalman should not have seen my train when standing at the station. The platform was no darker than usual, the gas lamps being all alight. The morning was fine but dull. I think quite 36 passengers jumped out of the train before the collision. I think the deceased passengers were partly in the rear vehicle and partly in the rear but one, which two vehicles were more or less broken up. I looked towards the signal-box, but I did not see the signalman in the cabin, and made no remark to him about the way in which we were being delayed.

9. *William Hughes*, 16 years' service; all the time a signalman.—I came on duty on the 14th instant at 6 a.m. in the Bishopsgate north box, to remain till 2 p.m. I have been employed in this box about six months. I work alone in the cabin, and do not keep a train register. When I have no train "On line" I keep my distant and home signals off, and block instruments at "Line clear." The train which preceded the train which was run into was a train from Walthamstow, and that left Bishopsgate about 6.20 a.m. I gave "Clear" for that train to the middle box at 6.20. After the train had started I took my up home-signal off, but I believe left my distant-signal at "Danger." I put to "Danger" the starting-signal and then took it off. I also took off the slot on the middle box up home-signal. The up starting-signal, although off so far as I was concerned, was kept at "Danger" from Liverpool Street, but I had not taken off my part of the starting-signal before receiving "Line clear" from Liverpool Street. After the departure of the up Walthamstow train a down empty carriage train passed about 6.24 a.m., and then the Enfield passenger train leaving Liverpool Street at 6.26 a.m. passed about 6.27 or 6.28 a.m. I am not sure when the Walthamstow train, which was afterwards run into, arrived at the station as it had not been bell signalled to me from the middle box. I do not know why I did not see this second Walthamstow train run into the station, but I did not see it, and I presume it must have been from a down train passing while the up train was running in, as the box, being on the platform, prevents my seeing an up train over a down train; and there is also more steam in the tunnel from a down train passing through the station without stopping than there is from a stopping train. The first signal I received after the first Walthamstow train had left, was one for the up Enfield train, and this I received at 6.29 a.m. from the middle box. When I received this signal I did not actually look towards the London end of the station or towards the middle box, although I had done so on two or three occasions since the passage of the down train, and since the first Walthamstow train had gone. I accepted the signal and pulled off the up distant-signal, which I then found had been left at "Danger." I received no other signal for the Enfield train after this until I got five beats asking for "Clear" for this train. The first time I became aware that the Walthamstow train was standing at the platform was when the Enfield train had passed the home-signal and was then within 40 or 50 yards of the Walthamstow train, and my attention was then attracted by the rear guard of the Walthamstow train shouting. I think the brake on the Enfield train was on when the train passed my cabin at a speed of seven or eight miles an hour. I tried to attract the driver's attention by shouting, but I did not show a red

light or flag. I cannot account for my not having seen or heard the second Walthamstow train pass into the station, there having been nothing to distract my attention. At the time of the collision there was a porter in the cabin, who had been in the box certainly not more than a minute before the collision, which occurred about 6.30 a.m. I had gone to bed about 10.15 p.m. the previous night, and had no particular cause for anxiety on my mind. After the first Walthamstow train had passed away from the station, I took off the slot at the middle box; this I am justified in doing as soon as the train has passed the starting-signal; and after receiving "Line clear" from Liverpool Street, I took off the home-signal and then my part of the starting-signal, but for some reason (I cannot explain what) I did not take off the up distant-signal. I think it may have been from my attention having been called to a down train at the time. The up line had just been cleared for this train when porter Eagling came into the box to bring me some water to make my tea, he did not remain more than 1 or 1½ minutes; he was leaving the box just at the time of the collision. On his bringing me in the water in the can, I put it on the gas stove, and in doing this I had my back to the line, but turned round immediately. I must have put the water on the stove before receiving "Train on line" from the middle box for the Enfield train. Immediately after the collision I threw both up and down signals to danger, and also signalled at the same time to Liverpool Street box for assistance on the block instrument, viz. five beats given four times. Under no circumstances should I be justified in allowing a train to proceed from the middle box to the up home-signal unless a train or engine had passed the rail contact in advance of the up starting-signal, which rail contact rings a bell in the box; this bell continues ringing until the train has passed it. This rail contact is a train's length in advance of the starting-signal. There is also a clearance bar a few yards inside the up starting-signal, and this is interlocked with the up home-signal.

10. *George Meredith*, signalman; 16 years' service, 14 years' signalman, all the time in the middle box at Bishopsgate, and in the new box since its erection about 15 months since.—I signal trains on the local and suburban lines, but not on the main lines. I came on duty on the morning of the 14th June at 6 o'clock for an eight hours' shift. I was alone in the cabin when the collision occurred. I remember the Walthamstow train, which preceded the 6.4 a.m. train from St. James' Street, passing my cabin, and this was cleared from the north box in the usual time. The next train was the 6.4 a.m train, which was signalled on from Bethnal Green. I accepted it and passed the signal on to the north box as the train ran past my box. The north box signalman pinned the needle over for that train, and to the best of my belief I described the train to Liverpool Street as a Walthamstow train. In due time Hughes cleared the train—as he had done the previous Walthamstow train—and immediately upon this Bethnal Green gave "On" for the Enfield train, which I accepted. I took off my signals for the Enfield train, and gave it on to the north box, and Hughes duly accepted it. The train passed my cabin at the usual speed. All my signals were off, but I cannot speak as to the distant-signal from the north box. Hughes did not "Clear" for this train. I had no necessity to ask for "Line clear" for the Enfield train, as the guard of it got back to my box and told me there had been a collision. At about 6.30 a.m. there was one up and one down train running on the local lines. I do not remember what trains had passed on the down suburban line. I am quite positive that I did not omit to signal forward the second Walthamstow train, and that it was accepted by the north box, and cleared in due course.

11. *Charles Kettle*, signalman; 25½ years' service, all the time a signalman.—I began work on the 14th June in the Liverpool Street box at 6 a.m. for an eight hours' spell. I have been in the Liverpool Street box for nearly 20 years, ever since the station was opened. I remember the arrival of the 5.54 a.m. train from Wood Street at 6.22 a.m. That train was duly described from the middle box. The next train described on the suburban line from the middle box was the 5.56 a.m. train from Enfield. I am quite certain that a second Walthamstow train was not described from the middle box, and on not finding it described I came to the conclusion that it must be late, and that the Enfield train was in front of it. I got no knowlege of the second Walthamstow train having arrived at Bishopsgate. I can throw no further light upon the running of the second Wathamstow train, except the fact that it was not signalled forward on the describing instrument from the middle box. I have no fault to find of any previous omission on the part of the signalman in the middle box in describing the trains. Had I been aware that the second Walthamstow train was waiting at Bishopsgate I should have let it into the station, as I was waiting for it.

12. *John White*, signalman; 21 years' service, 20 years a signalman.—I have been 15 years in the Bethnal Green west cabin, and came on duty there on the morning of the 14th June at 6 o'clock for eight hours. The 5.54 a.m. Walthamstow train from Wood Street arrived at Bethnal Green at 6.18 and left at 6.19 a.m. This train was duly accepted by the middle box. Another Walthamstow train from St. James' Street arrived at 6.20½ and left at 6.21½ a,m. So far as I am aware there was no mistake made by the middle box signalman in regard to either of these trains. The next train was the Enfield train, which arrived on the up line at 6.27, and left at 6.28 a.m., and the signalling between my box and the middle box with regard to that train was correct.

13. *Edward Henry Walsh*, foreman porter; 20 years' service, 12 years foreman porter.—I have been all the time employed at Bishopsgate station, where I came on duty on the 14th June at 4.33 a.m. to sign off at 2 p.m.. I was on the up platform waiting for the up Walthamstow train from St. James' Street to come in, and was then standing about 30 or 40 yards from the up starting-signal. I could clearly see the signal-cabin, there being quite sufficient light to enable me to do so. The lamps were all alight on the platform. When the up Walthamstow train was entering the station there was nothing at all running through the station on the down line. There was nothing whatever to prevent the signalman seeing the up train running into the station. The train was delayed some time in the station, but the delay was not anything particularly unusual, and I thought it was caused by it having to wait for a train to come out from Liverpool Street and I did not go to the signalman to ask him if he knew the cause of the delay. When the collision occurred I was at the front of the train speaking to the front guard who was on the platform. The collision took me unawares, I not having seen or heard anything of the Enfield train. The force of the collision moved the Walthamstow train forward nearly a carriage length. I did not see the north box signalman until about half an hour after the collision. I did not put any question to him as to the accident. It struck me as an extraordinary thing that the signalman should not have seen the train, and I cannot account for his not having seen it. When I saw Hughes, he appeared, with the exception of his being agitated, to be quite himself, and was not under the influence of drink. He did not smell of drink, and I have never known him drink. I have never known, when I have been on duty, a train omitted to be "given on" in the way the St. James' Street train must have been. The usual delay to trains at Bishopsgate does not exceed three minutes. In the case of this Walthamstow train the delay was so far unusual

that I said to the front guard, "They are keeping you a long time this morning."

14. *Thomas Martin*, porter; 2¼ years' service, about 15 months at Bishopsgate.—I came on duty there at 4.33 a.m. on the 14th to remain till 2 p.m. My duty was to clean the station and then to attend to the up suburban trains. When the first Walthamstow train left the station I was sweeping the up platform, and when the second train ran in I was on the platform, and I had just gone into the porter's room when the collision occurred. The porter's room is opposite to about the third or fourth vehicle from the engine if it stops in the usual place. I did no work in connection with the train. The train was four or five minutes in the station. All the lamps on the up and down platforms were alight except two at the down end, where the platforms are in daylight. I saw nothing of signalman Hughes after he went into his box.

15. *James Eagling*, porter at Bishopsgate station; eight years in the service, three years at Bishopsgate.—I came on duty on 14th instant at 4.33 a.m. to remain until 2 p.m., having left duty at 2 p.m. the previous day. I was attending the down suburban line trains. At about 6.25 a.m., after the departure of the 6.24 a.m. passenger train from Bishopsgate to Walthamstow, I was standing on the down suburban platform about 10 yards on the Liverpool side of the signal-box, when signalman Hughes looked out of the open window of the station (north) signal-box, and asked me to fetch him a little water to enable him to make some tea for his breakfast. There was no up train in the station then. I took the can from Hughes and went to a tap in the down platform urinal to get the water. Whilst walking back from the urinal to the signal-box, a distance of about 14 or 15 yards, a down suburban train ran through the station. I had not heard an up train run in whilst I was getting the water, and I did not notice one standing there. I got back to the signal-box with the water, and went insde, just as the tail of the down through suburban line train was passing the signal-box. Hughes had just attended to the block instruments for this down train when I entered the box, and I stopped in the box with him till he received "Line clear" from middle box for that train (about one minute). Hughes went to his gas stove at the back of the signal-box, and placed the can of water on it after he had received "Line clear" from middle box for the down train. As I was coming out of the signal-box I heard the "Train entering section" signal given on the bell from the middle box. I did not observe any train at the up platform till I heard some shouting almost directly after leaving the signal-box door, and before I could think what to do the up Enfield train ran into the rear of a train standing on the up platform line. It could not have been half a minute from the time I heard the shouting until the collision occurred. It was not part of my duty to attend to any of the up trains, so that I paid no attention to the arrival of trains on the up suburban line. There is a foreman porter and a porter to attend to the up suburban line trains at that time in the morning. I noticed when I entered the signal-box with the can of water that the block telegraph instrument to middle box indicated the up line clear, and I noticed also that the signal levers for the up line all stood off.

Conclusion.

The immediate causes of this sad collision are—

1. The omission of signalman Meredith, on duty in the Bishopsgate middle cabin, to signal forward to the Bishopsgate north cabin the 6.4 a.m. up workmen's train from St. James' Street, Walthamstow, which train arrived at Bishopsgate, and remained standing at the up suburban platform line for four or five minutes, with its tail about 15 yards west of Bishopsgate north cabin, unperceived by signalman Hughes on duty in that cabin.

2. The omission of signalman Hughes to notice that a train was standing at the up platform when the 5.56 a.m. up workmen's train from Enfield was signalled on to him from the middle box, before accepting the signal for this train and pulling off the up distant-signal, which he found he had unintentionally left at danger when he had lowered the other signals after the departure of the Walthamstow train which had preceded the one which had arrived without his knowledge.

Meredith denies that he omitted to signal forward the Walthamstow train to Hughes, and there would have been nothing to corroborate Hughes' denial of having received the signal for it but the fact that Meredith had failed to describe this very train on the electric train-describer provided between the middle cabin and Liverpool Street station cabin, the signalman on duty in the latter having noticed the omission, and having in consequence—on the Enfield train being described—come to the conclusion that it had got in front of the Walthamstow train. This omission of Meredith as regards the train describer makes it almost certain that he must have allowed the Walthamstow train to pass on to Bishopsgate without signalling it forward, and probably without noticing it pass his cabin.

Hughes, at the time of the Walthamstow train running into the station without his knowledge was most probably engaged at the back of his cabin boiling a can of water for making his tea which had just been brought to him by a porter. Not having received the signal for the Walthamstow train he was not expecting it, and though he may have heard an up train passing into the station would have concluded it was on the up local line, upon which the noise it would make would much resemble that of a train on the up suburban line. The 6.22 a.m. down empty train had passed through the station without stopping just before the arrival of the Walthamstow train, and the 6.26 a.m. down train for Enfield also without stopping just after its arrival. On receiving the signal for the Enfield train Hughes at once, without looking to see

whether the station was clear accepted it, pulled off the up distant-signal (the only one at danger), and was unaware that the Walthamstow train was standing at the platform until his attention was attracted by the rear guard shouting, at which time the engine of the Enfield train had passed the up home-signal, and was within 50 yards of the tail of the Walthamstow train, too late for Hughes to do anything but try to attract the driver's attention by shouting to him as he passed the cabin, when he thinks the speed of the train was seven or eight miles an hour.

As but for Meredith's omission to signal forward the Walthamstow train to Hughes, the collision would probably not have occurred, he ought to bear the larger share of the blame. Both are experienced signalmen of 14 and 15¼ years' service respectively in that capacity; both had come on duty at 6 a.m., about half an hour before the collision, for eight hours. Meredith's cabin is the busier of the two, as he has to attend to the trains both on the local and suburban lines, Hughes having to deal only with the suburban lines.

The Walthamstow train had arrived at Bishopsgate at 6.26 a.m. The driver had found the north cabin up distant-signal at danger, but the home-signal off, and he ran into the station and stopped about 8 feet inside the starting-signal and remained there, without whistling, waiting for it to be lowered till the collision occurred between 6.30 and 6.31 a.m. It took him quite unawares, and his engine was moved forward about 10 feet, the brake not being on his train at the time. Directly after the collision he and his fireman, thinking the down line might be fouled, jumped off and ran towards the station to stop the 6.29 a.m. down carriage train, which they did when its engine was almost opposite theirs.

The front guard, who was standing on the platform opposite the first vehicle, was also taken unawares by the collision.

The rear guard was standing on the step of his brake compartment looking towards the up starting-signal, when hearing the sound of an approaching up train, he turned round and saw that it was on the up suburban line, the engine being then he thinks about two carriage lengths east of the up home-signal. He hesitated a moment, thinking the train might stop at the home-signal, but seeing that it did not do so, shouted to the passengers in his train to get out, and then ran towards the other train, the engine of which passed him about 12 yards from the end of the platform at a speed of 10 or 12 miles an hour. He thinks that about 36 passengers had jumped out before the collision.

Harwood, the driver of the Enfield train, had been driver of the same train for the fortnight previous to the collision, and frequently on former occasions. He was perfectly well acquainted with the suburban lines between Bethnal Green and Liverpool Street. The four coupled wheels of the 8-wheeled tank engine he was driving, and all the wheels of the 15 vehicles composing the train were fitted with the Westinghouse automatic-brake, the working pressure being about 70 lbs., and the brake being in good order. Harwood says that he was keeping time, and that after leaving Bethnal Green he found the signals of the middle cabin and the distant and home signals of Bishopsgate north cabin off as he approached and passed them; that his speed on passing the Bishopsgate up home-signal did not exceed 20 miles an hour, steam having been shut off before he passed the middle cabin; that on reaching the ramp at the down end of the up platform (45 yards inside the up home-signal, and 55 yards from the tail of the Walthamstow train) he first saw the end of a train standing at the up platform, upon which he at once applied the brake with full force, and thinks the speed was reduced from 20 to 10 miles an hour on collision, after which his engine went forward about 10 yards, the roof of the last vehicle but one in the Walthamstow train coming over the top of the last vehicle on to the engine and knocking down the cab. Harwood states that there was no time to do more than he did, and that he got no indication, either by shouting or signal, of the Walthamstow train being in front of him, before he saw it.

Saville, Harwood's fireman, who has served as fireman 3½ years, and is well acquainted with the line between Bethnal Green and Liverpool Street, gives evidence to much the same effect as his driver. He states that he had time to open the sand-valves after catching sight of the big blackish end of the brake-van of the Walthamstow train from about the end of the platform, and that he thinks that, had there been a red light on the end of the train, he would have seen it sooner.

Williams, the front guard in charge of the train, riding in the brake compartment next the engine, states that steam was shut off half way between Bethnal Green and the middle cabin, the signals being all clear as far as Bishopsgate; that he thought the speed at Bishopsgate north up home-signal was about as usual, viz., between 30 and

35 miles an hour (he afterwards said he thought he might have overstated this speed); that directly after passing the up home-signal he saw from the left side window of the brake compartment passengers jumping from a train standing at the platform; that upon seeing this he at once applied the brake, turning the tap at about the end of the platform (about the same time he thinks that the driver applied the brake), the pressure gauge showing 75 lbs., and that the speed was reduced when the collision happened, but to what extent he cannot say.

Westley, the under guard of the train riding in the rear vehicle, was not aware of anything being wrong until he felt a sudden application of the Westinghouse brake, just when the rear vehicle was near to Bishopsgate north up home-signal, after which the speed which had been as usual, was reduced upon the collision taking place.

None of the Company's servants in these two trains had been on duty more than $3\frac{1}{2}$ hours when the collision took place, their work having ceased in good time on the previous day, and their timed day's work in no case exceeding about $10\frac{1}{4}$ hours. No blame is to be attached to any of them, except that I think Woodcock, the driver of the Walthamstow train, should have whistled after standing more than two or three minutes at the Bishopsgate up starting-signal, which the Liverpool Street signalman could have lowered had he known that a train was waiting at it.

All four servants with the Enfield train were injured, the driver, fireman, and front guard seriously.

Having now dealt with the immediate causes of the collision, it remains to be considered how it might have been prevented, or how the recurrence of a similar one may be guarded against.

In the first place I think that this collision would have been prevented but for the Great Eastern Company's practice of keeping the outdoor signals (except at junctions) normally "off" instead of normally at danger. Had the Bishopsgate up home, up slot, and up distant signals been kept at danger after the departure of the first Walthamstow up train until the signal for the second train had been sent from the middle cabin, the latter train would have been stopped at the middle cabin up home-signal until the Bishopsgate north signalman had released this up home-signal by means of the slotting lever; or, even supposing the slot on the middle cabin up home-signal to have been improperly taken off, and the train to have proceeded, without being observed, as far as the Bishopsgate up home-signal, upon reaching it and being detained at it the driver would have been certain to have whistled or taken other means to attract the signalman's attention, as he would have been detained at an unusual place, and would have guessed that something was wrong. The fact of the train having come on without advice from the middle cabin would thus have become known to the north cabin signalman, and the Enfield train would have been detained at the middle cabin.

I would therefore suggest, for the serious consideration of the Great Eastern Railway Company, the expediency of altering the system under which the outdoor signals are at present worked, and this more especially in places where trains are following each other at frequent intervals.

Secondly, there is no doubt but that the suburban line station at Bishopsgate is dark, though lighted with double gas burners at frequent intervals; with better light it is quite possible that the driver of the Enfield train might have seen the tail of the Walthamstow train in time to have stopped before reaching it. I am glad, therefore, to learn that the station will shortly be supplied with the electric light.

Thirdly, until the station is supplied with the electric light, up trains on the suburban line should be required to carry a red tail-light during daylight as well as during darkness.

Fourthly, a rail contact should be fixed near the Bishopsgate north up home-signal to ring a bell in the signal-cabin when a train is passing it.

It is also desirable that the rail contact, in advance of the up starting-signal, should be used for keeping at danger the up home-signal until a train has passed the rail contact.

I have, &c.,

C. S. Hutchinson,

Major-General, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Damage to Engine of Enfield Train.

Back of coal bunker, also right side of same, badly damaged; foot-plate at bunker end broken; cab of engine entirely broken up, and will require renewing, also new chimney required; tank, air-pipes, and lamp irons broken at bunker end; Westinghouse air-pipe broken; both trailing buffers broken; two Westinghouse and one steam-pressure gauges broken; hand-rail pillars broken; two driving-springs badly shifted; top of dome casing damaged.

Damage to Carriages of Enfield Train.

Third-class brake-van, No. 291.—One gas lamp and end light broken.

Third-class carriage, No. 919.—One door glass broken.

First-class carriage, No. 328.—Two buffers bent, 8 curtains torn, and floor pushed up.

First-class carriage, No. 59.—12 curtains torn.

First-class carriage, No. 24.—16 curtains torn, one photo glass broken, and one buffer bent.

Second-class carriage, No. 361.—Six curtains torn.

Damage to Carriages of Walthamstow Train.

First-class carriage, No. 293.—One buffer bent.

Second-class carriage, No. 332.—Two buffers bent.

Second-class carriage, No. 68.—One buffer bent.

Third-class carriage, No. 290.—One buffer bent.

Third-class carriage, No. 325.—One buffer bent.

Third-class carriage, No. 205.—Two buffers bent.

Third-class carriage, No. 284.—Two buffers bent.

Third-class carriage, No. 584.—Headstock, end bar, end panels and framing, floor, corner pillar, seat and inside casing broken; two buffers and end gas pipes bent.

Third-class carriage, No. 898.—Four buffers bent.

Third-class carriage, No. 535.—Four buffers bent, and two large quarter lights broken.

Third-class carriage, No. 622.—Two buffers bent, and one buffer-block and plate broken.

Third-class carriage, No. 230.—One headstock, two stepboards, and end arch rail broken, two buffers, truss bar, two leg irons, end gas pipe and fitting bent, and roof pushed up.

Third-class carriage, No. 595.—Completely broken up.

Third-class brake, No. 217.—Completely broken up.

Printed copies of the above Report were sent to the Company on the 5th August.

GREAT EASTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
August 2, 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in your Minute of the 22nd July, the result of my enquiry into the collision that occurred on the 18th idem at Forest Gate Station on the Great Eastern Railway.

On the occasion in question the 5.8 p.m. passenger train from Fenchurch Street to Forest Gate, which arrived at the latter place at 5.33 p.m. (three minutes late), ran into the buffer-stops at the end of the bay line on the north side of the station.

Thirty passengers and one of the guards of the train are reported to have sustained slight injuries.

The train consisted of a tank engine (with four wheels coupled and a trailing bogie) and twelve vehicles, including a brake-carriage and a brake-van. It was fitted throughout with the Westinghouse continuous-brake, and with the usual hand-brakes on the engine and vans. The engine was running chimney in front the brake-carriage was next the engine, and the brake-van was in rear of the train.

The damage to the train and buffer-stops was trifling, and the engine and permanent-way were not injured.

Description.

Forest Gate station, which is situated on the main line to Colchester, is provided with up and down main line platforms. At the back of the down main platform, at the west end of the station, there is a bay or dock, into which the local trains from Fenchurch Street to Forest Gate run. The station is approached from the west by four lines, viz., the up and down main, and up and down local lines, but the local lines converge into the main lines just outside the station, there being at present only two lines running through. The signal-cabin is situated about 60 yards outside the station, and opposite to it there is a facing-point connection on the down local line, giving access to the bay at the back of the down platform. The bay platform is 160 yards long, and there is a rising gradient, varying from 1 in 370 to 1 in 2,000, all the way from the down distant-signals to the buffer-stops at the end of the bay.

The following distances should be noted :—

From the down distant-signals to the buffer-stops	-	-	1,220 yards.
„ „ home-signals „ „	-	-	352 „
„ signal-cabin to the buffer-stops	-	-	212 „

The bay line has only been brought into use during the last few weeks, previously to which the local trains ran into the station on the down main line. There is a printed instruction for the guidance of the signalmen, that trains for the bay are to be brought "nearly to a stand" at the home-signal, before that signal is lowered for them to enter the station.

Evidence.

1. *Edwin Holmes*, foreman porter, Forest Gate, states: I have 13 years' service, and for 7½ years I have been foreman porter at Forest Gate. I know the working of the station very well. I came on duty on the 18th July at 3 p.m., having left duty the previous day at 12 midnight. I was on the platform at the time the 5.8 p.m. train from Fenchurch Street came in. It was due at 5.30, but arrived three minutes late. I was on the platform waiting for the train and could see it running all the way from Maryland Point station. As it approached Forest Gate it appeared to be running at about the usual rate of speed; it was checked at the home-signal in the usual course. The home-signal for the dock line is the lowest one on the bracket. The train did not come to a stop at the signal, but it was checked in speed, and on the signal being lowered the train came into the station through the facing-points opposite the signal-box to run to the dock at the back of the down platform. The train ran rather faster than usual into the station. I was standing about 70 or 80 yards from the dead end when it came it. I should say that the train entered the dock at a speed of about five miles an hour. I only noticed one brake on; that was the front guard's hand-brake. I did not see the rear guard's brake. No brake was applied on the engine as far as I could see. The train was worked by a tank-engine running chimney first, and was fitted with the Westinghouse brake throughout. It did not appear to me that the driver made any effort to pull the train up; he had not steam on. The speed of the train was reduced but very little when it reached the buffer-stops. When I saw the train entering the station I thought from the rate it was travelling at that it would run into the stops, and I thought so more when the train passed me. The shock of the collision was rather severe, but there was very little rebound as the brakes were too hard on. The Westinghouse brake had not been applied when the train passed me, but it was put on about five or six yards before reaching the stops. It was, I believe, then applied by the front guard. The buffer-rods of two carriages were badly bent, and one of the coupling links was broken. The vehicles damaged were those nearest the engine. I cannot say whether the engine was damaged. The buffer-stops were slightly pushed back, one of the blocks being broken. Several passengers complained to the station-master, who took the particulars. I did not make a thorough examination of the train after the accident, but I went to the front van and noticed that the hand-brake was on. I did not see the rear brake. I judged from the force with which the Westinghouse brake was applied, that the guard and not the driver had put it on. When I reached the front van the Westinghouse brake lever was back in its proper place. I did not speak to the driver at the time, but I saw him later and asked him how he came to do it and whether he thought he was running on the main line. He replied No, he did not think so. I asked the front guard what he was thinking about in coming in at that rate. He replied, "I had my hand-brake on and I pulled the tap over, but not soon enough." I also asked Bullivant, the rear guard, and he said he had his hand-brake on. The 5.8 p.m. train from Fenchurch Street has run into the dock daily since the dock was opened a month ago; there was therefore no reason for the driver to think that he would run into the station on the main line. It was raining at the time of the collision and the rails were rather wet. The 5.8 train from Fenchurch Street only makes one trip to Forest Gate; the driver had not worked into the dock before on that day, but he had worked the 5.8 train in for ten nights previously. I have not before seen a train approaching so quickly as the 5.8 train did on the 18th instant. Trains for the dock line usually pull up within three yards of the stops. I did not see the driver give the engine steam after shutting off steam in approaching the home-signal. He seemed to simply let the train run in. The speed of the train was from eight to ten miles an hour at the time the signal was dropped. The train appeared to be close up to the signal when the arm was lowered. I shouted to the driver three times as he ran in, twice to "Steady" and once to "Stop," but he took no notice. He was leaning over the side of the engine on the platform side looking towards the stops when I called to him. So far as I know I did not attract his attention, but some passengers who were at a distance of 80 yards heard me call out.

2. *George Stone*, passenger guard, states: I have 11 years' service, and have been for five years a guard. I came on duty on the 18th July at 9.0 a.m. having left duty the previous day at 11.30 p.m. I had been working in the service between Liverpool Street, Fenchurch Street, and Woolwich during the day on the 18th July. I left Fenchurch Street that day at 5.8 p.m., right time, with the train for Forest Gate. The train consisted of 12 coaches, including one brake and one brake-carriage. The brake-carriage was next the engine and the brake-van was in the the rear of the train. We made seven stops between Fenchurch Street and Forest Gate. The train was fitted throughout with the Westinghouse-brake. The connections were all properly made. The brake was tested when the engine was coupled on at Fenchurch Street. The rear guard tested it; I was watching the gauge at the time and he made the usual reduction of pressure. The pressure when approaching the home-signal at Forest Gate was 75 lbs. The speed of the train was checked just a little by the application of the Westinghouse brake as we approached the home-signal. I noticed that by the gauge. We were about 20 yards from the home-signal when that signal was lowered. We were travelling then at about eight miles an hour. I am sure that it was at danger when I first saw it. I did not notice the driver give the engine any more steam after the signal was lowered. There is no other signal for the dock besides the bracket home-signal. I do not think the train was going faster than usual when passing the signal, and I do not think we ran faster than usual to the platform. When we came to the platform I put on my hand-brake in the ordinary course of working. Nothing unusual struck me as to the speed of the train up to the time of putting on my hand-brake, but when about 10 yards from the stops I thought we were going too fast and I then applied the Westinghouse-brake putting it hard on. It acted properly throughout the train, but I did not apply it quite soon enough.

If I had not applied the Westinghouse brake I think we should have gone into the stops with greater force. As far as I know the driver did not apply his Westinghouse brake after passing the home-signal; we had about 75 lbs. of pressure when I applied it. This was the first night I had worked a train into the dock, as I had not previously worked with the 5.8 train, since the dock line had been opened. It was a wet night and the rails were greasy. I should think the speed of the train would be about five miles an hour when I applied the Westinghouse brake. I did not notice anything wrong with the driver; there was no suspicion of his being in liquor. I had not been working with him all day, he having only joined the 5.8 p.m. train at Fenchurch Street for the trip in question. At Stepney we were pulled up near the Stratford end of the platform. It is not usual to run to the extreme end. At Burdett Road my mate applied the Westinghouse brake, my brake-carriage having run beyond the platform. At Bow Road, Stratford, and Maryland Point, the train stopped very well. I understand that my mate applied the Westinghouse brake at Bow Road. I did not have occasion to apply either the Westinghouse or hand brake at any station, except Forest Gate.

3. *Amos Bullivant*, passenger guard, states: I have 30 years' service, and have been for 28 years a guard. I came on duty on Monday 18 July at 9.9 a.m., having left duty at 11.50 p.m. on the 17th. I was with the train all day working between Woolwich and Fenchurch Street and Fenchurch Street and the dock. I left Fenchurch Street for Forest Gate at 5.9 p.m. one minute late. The train stopped a little rough at one or two stations owing to the driver sharply applying the Westinghouse brake. At Bow Road, thinking the train was running in rather quickly, I applied the Westinghouse brake, but finding the train was stopping I shut off the brake. On approaching Forest Gate I saw the bracket-signal for the dock line was off. The train was travelling at about nine or ten miles an hour when we were against the signal-box. I cannot say whether that speed was unusual as I have only on one occasion previously worked with this train. I did not think when we were passing the signal-box that we were going too fast. The driver did not put on steam after passing the home-signal; we slackened speed just against the box and then ran in. I think the speed of the train was reduced by the driver shutting off steam. As far as I know, the driver did not apply the Westinghouse brake at all either before or after passing the home-signal. The speed of the train, when we ran into the station, was I think about five miles an hour. I had no idea then that we were going too fast. I put my hand-brake on in accordance with the rules when entering the dock line. The first I knew of the mishap was the way in which the train stopped. Some passengers remarked that this was rather rough, and I said, "Very." My impression was that the Westinghouse brake had been suddenly applied, and I did not know that the train had run into the stops. I do not think there was the slightest rebound. I did not feel it. I had hold of the brake, and was thrown on my back in the van, and my hand was slightly injured. It was a very wet day. I did not notice the condition of the driver. He had joined the train at Fenchurch Street, and had not been working with me previously during the day.

4. *Arthur Patmore*, driver, states: I have had 18 years' service, and have been for 4½ years a driver. I am classed as a passenger driver. I came on duty on the 18th July at 1.55 p.m., having left duty the previous day (Sunday) at 12.15 night. My engine, No. 73, is a tank-engine with four wheels coupled and trailing bogie. From 1.55 to 5.8 p.m. I had been working between Liverpool Street, Fenchurch Street, and Forest Gate. I joined the 5.8 p.m. train at Fenchurch Street, where I backed on to it with my engine. We left Fenchurch Street to time, viz., 5.8 p.m. The engine and train were fitted throughout with the Westinghouse brake, and the connections between the engine and train were properly made. I am sure of that. The brake was tested by the guard before starting. I know that was done. I stopped at every station between Fenchurch Street and Forest Gate. The brake acted properly at all the stations. I did not overrun the platform at any of the stations. At Stepney I pulled up all right, but I ran a little further than usual along the platform. There was no particular reason for that. At Burdett Road I pulled up all right. The engine was past the platform, but the front van was at the platform. I did not feel the application of the Westinghouse brake by the guard at Bow Road. I had worked the 5.8 train into the dock at Forest Gate for a fortnight previous to the 18th July, and I had been into the dock 12 or 14 times. I know the way in quite well. When I first saw the home-signal for the dock it was at danger, but it was lowered before I reached it. We might have been running 16 miles an hour at the time the signal was lowered. I had reduced the speed to 16 miles an hour by means of the brake, but did not give the engine steam again up to the time of the collision. By the time we passed the signal-box I had reduced the speed to about nine miles an hour, having reapplied the brake between the home-signal and the signal-box. When we entered the platform I still had the brake on, and the speed was still further reduced, say to about five miles an hour. I felt quite confident that I should be able to stop the train before I reached the buffer-stops, but when a short distance from the stops I thought I should not be able to stop in time, and I then applied the brake, but I did not reverse the engine. I did not apply my brake so hard as I might have done because I was afraid of jerking the passengers. I cannot say whether the guard applied the brake as I did not feel it. If the guard opened the cock suddenly I should be bound to feel it, but I did not do so. My gauge was showing between 70 lbs. and 75 lbs. at the time I applied the brake when close up to the stops. I think the wheels skidded. I am sure that the engine wheels "picked up." I could not say that the guard did not apply the brake, but had he pulled the cock over fully I think I should have known it. The rails were wet, there being a drizzling rain. I allowed for that. The rule for entering terminal stations, or stations with dock lines like Forest Gate is, that we should run in at such a speed as to be able to bring the train up by the application of the ordinary hand-brake. I understand this to mean that I should use the hand-brake only, and not use the Westinghouse brake. I call five miles an hour a speed at which a train could be brought up by the hand-brake. I did not on the occasion in question whistle for the guard's brake. Up to the last I thought we should stop. I have never had any trouble in running into Forest Gate before. I have stopped a bit short sometimes, but, as a rule, I like to run up. I attribute the collision to an error of judgment on my part. I thought we were going in at about the same rate as usual, and I could not have made sufficient allowance for wet rails. I have no reason to suppose that I did not get the usual assistance from the guards. I sanded the rails when I thought we were going into the stops. My fireman was applying his hand-brake at the time. I heard foreman porter Holmes shouting as I ran into the station, but I did not hear what he said, or understand what he meant. It did not strike me that he was calling my attention to the fact that I was going too fast. I was looking ahead, and thought I had the train under proper control, and therefore I did nothing. I was about 200 yards from the home-signal when it was lowered, and I was then travelling at about 16 miles an hour, and I could have pulled the train up if the signal had not been lowered. I did not whistle for the signal as it was lowered as I approached it.

5. *George Wright*, fireman, states: I have 4½ years' total service, and 14 months as fireman. I came on

duty on the 18th July at 1.55 p.m., my hours of duty being the same as the driver's. I left duty the previous day at 12.15 night. I had been firing for driver Patmore about a fortnight. I left Fenchurch Street with the 5.8 train, about right time on the 18th instant. When approaching Forest Gate station I saw that the home-signal for the dock was off. The driver had shut off steam before I saw the signal. We were then travelling at about eight or nine miles an hour. The driver did not give the engine steam after the signal was lowered, but released his brake and let the train run down. He applied his Westinghouse brake again slightly just after passing the signal-box, and I applied the hand-brake as we ran into the station. The train was then travelling at about six or seven miles an hour, which is about the usual speed, and we were running at about the rate of one or two miles an hour when we collided with the buffer-stops. I thought that we should have run into the stops when about half-way down the platform. The driver then applied his Westinghouse brake, and I put on my hand-brake as tightly as I could. I did not feel the application of the brake by the guards. The driver applied the brake as hard as he could when about half-way down the platform. The driver did not whistle for the guard's brake, and he did not reverse his engine. The rails were wet. No damage was done to the engine, which went on with its work in the usual course.

6. *Harry Young*, signalman, states: I have 11 years' total service, and 10 years as signalman. I have been 10 months in the Forest Gate station-cabin. I came on duty on the 18th instant at 2.0 p.m. for an eight hours' shift. I left duty the previous day (Sunday) at 10.0 p.m. The rule for trains running into the dock is that we should bring the trains nearly to a stand at the home-signal. That is a printed instruction. When the 5.8 p.m. train arrived on the 18th, I carried out the order, and the engine was about 20 or 30 yards from the post when I lowered the signal. I think the speed was reduced to about two or three miles an hour before I lowered the home-signal for the dock line. I think if I had not pulled off the home-signal the driver would have been able to stop at it. When the train passed me I did not notice anything unusual about it. I was not aware that it had collided with the buffer-stops until told of it afterwards. The train ran in at the usual speed. I did not notice whether the driver had his brake on at the time the train passed my box. I do not know whether the driver put on steam after once shutting it off. I think the train was travelling about five or six miles an hour when it passed my box; that is the usual speed. I am not certain at what speed the train passed the home-signal, but I am certain that I did not lower the signal until after the train had passed the up advance starting-signal. Since the mishap, I have brought every train to a dead stand at the home-signal before lowering the signal for the dock line. I cannot say whether the driver whistled for the signal on the occasion in question, but drivers are supposed to whistle for the dock line if the signal is against them. The dock has been open about a month; before that the trains used to run to the down main line. No other train has run into the stops. I think from the rate of speed the train passed my box, the driver could have pulled the train up if he had applied his brake in sufficient time.

Conclusion.

It is clear from the evidence that in this case, as in most other collisions of a similar nature, the train was allowed to run into the station at too high a rate of speed, and that the driver, who was relying on his Westinghouse brake to stop the train, failed to apply the brake in sufficient time.

The rule in force on the Great Eastern Railway as regards trains entering terminal stations, is as follows: "Engine drivers must always enter such stations or a dead end "bay at any station at such a speed as to enable them to stop the train at the proper "place by the application of the hand-brake only." Driver Patmore stated that he understands this to mean that the hand-brake only is to be used, as a rule, for stopping a train in such stations, and this, as I have stated on previous occasions, appears to me to be the correct interpretation of the words of the rule. But the officers of the Great Eastern Railway Company informed me that this is not the construction that they put on the rule. They take it to mean that though trains must enter such stations at hand-brake speed, drivers are at liberty on all occasions to use the continuous-brake. On the occasion in question, the driver's statement to me and the facts disclosed by the evidence would seem to show that he intended to act upon the latter interpretation. But it is clear that he entered the station at a greater than "hand-brake" speed, and to this extent at least he failed to obey the rule. Having done this, he seems to have taken no steps to repair his error, but to have allowed the train to run down the platform without making any further attempt to reduce the speed, until he was dangerously near the buffer-stops. It would then seem that both the driver and front guard simultaneously applied the Westinghouse brake, but it was too late, and before the train was brought to a stand it collided with the stops.

The rails were wet, but the rule quoted above enjoins that, "In stopping his "train, he (the driver) must pay particular attention to the state of the weather and "the condition of the rails." Moreover, the evidence of the two guards indicates that the train had been pulled up in an unsatisfactory manner at one or two previous stations, and not only at Forest Gate but also at Bow Road, it had been necessary for one of the guards to apply the continuous-brake. The driver does not admit this, but I prefer to accept the guards' statements on this head rather than the driver's. Further, at Forest Gate the speed of the train appeared so high that foreman porter Holmes thought it necessary to call out to the driver, though without avail, to "steady" or to "stop" the train.

Driver Patmore attributed the collision to an error of judgment on his part in not making sufficient allowance for a wet rail; but taking all the circumstances into consideration, I cannot avoid the conclusion that the mishap was due to a breach of the rule and to a want of care on the driver's part, rather than to a mere error fo judgment. I consider that he entered the station at too high a rate of speed, and that for no apparent reason, he failed to apply his brake in proper time. He had been on duty for three hours and 38 minutes at the time of the occurrence.

Signalman Young is not altogether free from blame in the matter. There is a printed rule in the Forest Gate cabin that trains for the bay are to be brought "nearly to a stand," before the home-signal is lowered for them to enter the station; but there is no doubt that on the day in question Young lowered the signals for the train while it was still travelling at a fair rate of speed, estimated by the driver at 16 miles an hour, and by the guards at eight or nine. There is, however, some excuse for the signalman, for from the position of the cabin and the straightness of the line, it is difficult for a man in the cabin to judge the speed of a train, which is advancing directly towards him. Nor does the signalman's error in any way lessen the driver's responsibility. Young had been on duty for three hours and 33 minutes at the time of the collision.

The Great Eastern Railway Company have since the date in question issued fresh instructions to the signalmen, by which every train for the bay is to be brought to an absolute stop at the home-signal before the latter is lowered for the train to enter the station, and if these instructions are obeyed there should be no repetition at Forest Gate of such mishaps.

Buffer-stop collisions, such as the one under consideration, can hardly be regarded as accidental or excusable. Though rarely attended by very serious consequences they are productive of minor injuries and discomfort to a large number of persons. Their frequency and their severity would be reduced, if the speed of trains entering terminal stations or bay lines were invariably limited to hand-brake speed. The simplest way of attaining this object would seem to be, as has frequently been urged by the inspecting officers of the Board of Trade, to alter the present rule so as to make it quite clear that the use, except in emergencies, of the continuous-brake for stopping trains in such stations is prohibited. And, to quote General Hutchinson's words,* "it is difficult to see what would be lost by so doing if the present rule is really "intended to be obeyed, for as it now stands it enjoins a cautious speed in entering "terminal stations, and the effect of the change would be only to make obedience "to it more easily enforced, and breaches of it more readily detected."

If this course is not adopted, the wording of the rule should at least be amended, so that there may be no doubt as to its meaning, and obedience to it should be strictly enforced at all times and places.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

(Signed) H. A. Yorke,
Major, R.E.

Printed copies of the above Report were sent to the Company on the 19th August.

GREAT EASTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
18th August 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 5th instant, the result of my enquiry into the circumstances attending a collision, which occurred on the 1st instant at Stepney, on the Great Eastern Railway.

In this case the engine of a London, Tilbury, and Southend special up excursion train from Tilbury, which had stopped at Stepney station at 8.46 p.m., and had drawn forward for station purposes, left the rails at the crossing of the right-hand up line and the down Stratford line, immediately after starting again, and fouled the down Blackwall line, just as the 8.40 p.m. down Great Eastern train from Fenchurch Street to Blackwall was about to pass. Both engines were tank-engines, running bunker in front, and the left-hand

* Report, dated January 9th, 1891, into buffer-stop collision at East Hartlepool.

leading corners came into collision. The London, Tilbury, and Southend engine was driven back for a few feet, and the bunker of the Great Eastern engine was broken in, fatally injuring the driver, who died a few minutes after the collision; 12 passengers and the guard of the Blackwall train are stated to have been injured. The engine and one carriage in the Blackwall train, and the engine and leading van in the London, Tilbury, and Southend train were damaged (for particulars, *see* Appendix), and, on the permanent-way, three chairs were broken, and a check-rail was bent.

The two trains were made up as follows :—

The London, Tilbury, and Southend train.—Tank-engine (running bunker in front), second-class brake-carriage, five second-class, five first-class, and two second-class carriages, and a second-class brake-carriage.

The Great Eastern train.—Tank-engine (running bunker in front), brake-van, one second-class, two first-class, and two third-class carriages, and rear brake-van.

Description.

At Stepney junction, which is about 96 yards west of Stepney station, the double line from Blackwall to Fenchurch Street, running from east to west, is joined by the double line from Stratford to Fenchurch Street, running from the north-east, the trailing points of the junction being upon the up Blackwall line. The station has three platforms, one outside the down line to Stratford, one outside the up line from Blackwall, and an island platform on the angle between the up Stratford and the down Blackwall lines, serving as a platform for both these lines.

Westwards from the station there is a second up line, called the right-hand up line, which leaves the up Stratford line by facing points about 15 yards west of the up end of the up Stratford platform, crosses the down Stratford line about halfway between the station and the junction points, and runs forward to Fenchurch Street on the north side of the down main line.

West of the crossing of the down Stratford line, and the up right-hand line, which is the place where the London, Tilbury, and Southend engine left the rails, the right-hand up line is straight, but from the facing-points alongside the platform to the crossing this line is upon a series of curves to the right, looking towards Fenchurch Street. These curves have radii of 5 chains, 6 chains, and 9 chains, the crossing being upon the 9-chain curve.

The gauge of the line is slightly tight, and the high rail, which is the left-hand rail, has a super-elevation of from $1\frac{1}{4}$ in. to $1\frac{1}{2}$ in.

The diamond crossing is not a very obtuse one, being a one in seven crossing, and the distance between the fixed points of the crossing is 1 ft. 7 ins. The low rail of the curve is fitted with a check rail as far as is possible, and at the elbows of the crossing there is a space of 2 ins. between the check rails and the stock rails.

The crossing was renewed in August 1891, the whole junction having been relaid in 1889. The permanent-way appeared to be in very fair order, and considering the enormous traffic over this junction, the rails were not worn more than might have been expected.

The London, Tilbury, and Southend engine, which left the rails, is a 10-wheeled tank-engine, with a leading four-wheeled bogie, driving wheels and intermediate wheels coupled, and trailing wheels with radial axle-boxes, the axle being fitted with strong spiral springs allowing a play of $1\frac{1}{4}$ ins. in each direction.

The diameter of the wheels is as follows :—

	Feet	inches.
Bogie-wheels	3	1
Coupled-wheels	6	1
Trailing-wheels	3	1

The wheel-base is :—

Between bogie-wheels	6	6
From bogie centre to driving wheels	10	4
From driving to intermediate wheels	8	6
From intermediate trailing wheels	7	3

The total wheel-base from front bogie wheels to trailing wheels is 29 ft. 4 ins.; the length of frame is 32 ft. 11 ins.; and the length over the buffers is 36 ft. $9\frac{1}{2}$ ins. The engine has outside 17 in. by 26 in. cylinders.

The normal weights of the engine are as follows —

	Tons.
On bogie	16
On driving wheels	16
On intermediate wheels	16
On trailing wheels	8
Total	56

When weighed after the accident, the mean of the weights taken with the chimney in opposite directions when the engine, loaded as it was at the time it left the rails, was upon the weigh tables, was as follows :—

	Right.			Left.			Total.		
	Tons	cwts.	qrs.	Tons	cwts.	qrs.	Tons	cwts.	qrs.
Bogie wheels	8	3	2	8	10	0	16	13	2
Driving wheels	8	18	1½	7	18	3½	16	17	1
Intermediate wheels	7	19	1½	7	14	3	15	14	0½
Trailing wheels	4	11	2½	4	9	2	9	1	0½
Total	29	12	3½	28	13	0½	58	6	0

The springs are all in good order, and the flanges of the leading wheels are only four months old and very little worn.

The engine was built in 1884, and between December 1884, when it commenced work, and December 1891, it ran 286,920 miles. It was then thoroughly repaired, and recommenced work in April 1892; since which date it has run 15,524 miles, making a total mileage of 302,444 miles.

The following distances from the facing-points of the up right-hand line, or the up Stratford line should be noted.

To west end of up Stratford platform	45 feet	eastwards.
To signal-cabin on the angle between the two lines	45 ,,	
To crossing of left rail of down Stratford line and left rail of up right-hand line	71 ,,	
To centre of diamond crossing, the crossing of the right rail of down Stratford line and left rail of up right-hand line	139 ,,	westwards.
To the point where the leading wheels of the London, Tilbury, and Southend engine came to a stand after leaving the rails	159 ,,	
To junction points	235 ,,	

Evidence.

William Henry Orchard states: I have been 27 years in the service of the Great Eastern Railway Company, and a signalman for 22 years, at Stepney junction all the time. On the 1st August I came on duty at 2 p.m. for eight hours. A special up train from Tilbury was given "On line" to me from Salmons Lane on the up line at 8.44. It arrived and stopped at the platform at 8.46. It stopped for two minutes, and then had to draw up for about two carriage lengths, as the train was too long for the platform. When it came to a stand again the leading end of the engine was very near the angle-crossing. At 8.48 I got the "On line" signal from Devonport Street for the 8.40 p.m. down Great Eastern train to Blackwall. When the Tilbury train came to a stand after drawing ahead the Blackwall train was approaching on the down line with the signals off for it. The Tilbury train started the second time after standing for about one minute, and at that time the Blackwall train was not more than 20 yards away from it. The Blackwall train had to stop at the station, and was running slowly. I saw the Tilbury train stop almost immediately after it started, and the collision occurred at once. I did not see the Tilbury engine leave the rails, nor did I know that it had left the rails until after the collision. No engine has left the rails at that crossing at any time when I have been on duty.

Harry Townsend states: I have been nearly 20 years in the service of the London, Tilbury, and Southend Railway, and a driver for about seven years. On the 1st August I came on duty at Shoeburyness at 6.30 a.m. I left Shoeburyness for Barking light, arriving there at 8 a.m., left at a quarter-past 11 with a train for Southend, arriving at about 12.20, then went light to Shoeburyness, leaving Southend at 1.20. I came back light after getting coal and water, and then left with an empty carriage train to Tilbury, starting at 4.40 and arriving at 5.18. I left there at 7.44 with a special excursion train for Fenchurch Street, due at about 8.50. Then I would have had to receive orders as to what to do. My ordinary hours vary from 12 to 13. I was not on duty the previous day. My engine, No. 26, is a ten-wheeled tank-engine, with leading bogie, four coupled wheels, and trailing 3-ft. wheels with radial boxes. When leaving Tilbury at 7.44 my engine was running bunker first. Everything went well until arriving at Stepney, and we were not checked very much on the road. We stopped at the up platform, and after standing for about two minutes my guard Blakely

ordered me to draw up a little. I drew forward for three or four carriage lengths, coming to a stand with my leading wheels just about on the crossing. I stood for about another minute, and then received a signal to start from my guard. The starting-signal was off when I passed it on starting the first time. I started the second time the moment I got the signal, and almost directly afterwards I felt one of the leading wheels strike something which I suppose was the point of the crossing. I then felt the front end of the engine drop, but which side I cannot say. Directly I felt the first blow I shut off steam at once, and put on the Westinghouse brake which was fitted to the whole train. I came to a stand after running for about six yards. Directly I had put the brake on I looked ahead, and saw the lights of a down Blackwall train. I do not think they were more than a dozen yards off, if as much. I turned on a red hand-light, and showed it over the side, but almost at once the Blackwall engine struck my engine, and drove it back two or three feet. The Blackwall train was running slowly, perhaps at 15 or 20 miles an hour. The engine of that train was also running bunker first. I did not start very sharply. After the accident I looked at the position of my engine, and I found that the left leading, the left intermediate, and the left driving wheels, were off the rails over the left side of the proper right rail of the down line, the corresponding wheels on the right side being in the 4-ft. way of the down line. The bogie had not reached the angles, and the wheels were on their proper rails. I looked at the crossing, and did not see anything unusual about it, except that there were two or three broken chairs. I saw a mark on one of the check rails, but I cannot remember which. I cannot say that I saw any mark of a flange running over the top of the rail outside which my left wheels were standing. I have been driving this engine under four months; but before that I had been driving a similar engine (No. 16), for over two years. We occasionally turn them, but not as a rule unless we have a very fast train to run. I find very little difference in them whichever way they are running. Some go faster one way, some the other. I consider them very steady engines. I felt nothing particular in the way of a lurch when starting upon this occasion. I had a full tank of water, and between 1½ and two tons of coal. I think the accident may have been caused by my having stopped on the crossing with the weight of the train, owing to the curve, on my right rear buffer, and when the engine started it tried to right itself, and got the wrong side of the points. After the collision the Blackwall engine, which was still on the rails, and, I think, part of the train, got past my engine before coming to a stand. I was with my engine when it was placed upon the rails. It was jacked up, and I think there was only one lift made. It was jacked on to the rails of the right-hand up line, upon which the bogie wheels were standing.

Alfred Doarks states: I have been 10 years in the service of the London, Tilbury, and Southend Railway Company, and a fireman for six years. On the 1st August I was working as fireman with Harry Townsend all through the day. His evidence, which I have heard read over, is correct.

William Blakeley states: I have been nearly 17 years in the service of the London, Tilbury, and Southend Company, and a guard for nearly the whole time. On the 1st August I came on duty at 7.20 a.m. at Shoeburyness. I came with the 7.56 train from Shoeburyness to Fenchurch Street, arriving at 10 a.m.; left with the 10.15 train arriving at Shoeburyness at 12.16; left with the 2.24 p.m train; arriving at Pitsea at 2.58; left with the 3.2 p.m. train, arriving at Fenchurch Street at 4.25; left at 4.29 p.m, and arrived at Tilbury at 5.37 p.m. I was then guard of the train leaving for Fenchurch Street at 7.44. It was a well-filled train, and consisted of tank engine, second-class brake-carriage, in which I was riding, five second-class, five first-class, and two second-class carriages, and a second-class brake-carriage. It was fitted throughout with the Westinghouse brake. We left Plaistow at 8.27 p.m., and arrived at Stepney at 8.44 p.m., stopping at the up platform. In about two minutes I ordered my driver to draw ahead, as I received a signal from the station staff to do so. The driver drew up between three and four carriage lengths, and then came to a stand. About two minutes afterwards I received a signal from the station, and signalled to my driver to proceed. He started, and came to a stand almost at once. I heard a grating sound and surmised that he was off the rails. I jumped out at once, and turned on a red light to show to a down train which I heard approaching, but it was on me at once, and I had to jump out of the way. After the collision I saw that the left wheels of the engine were outside the right rail of the down line.

William Walbey states: I have been about 30 years in the service of the Great Eastern Railway Company, and a fireman for 22 years. On the 1st August I came on duty at Millwall Junction at 2.30 p.m., and was working all the afternoon between Blackwall and Fenchurch Street. My duty hours lasted till 12.30. The engine (No. 327) is a tank-engine with six wheels coupled. My driver's name was Walter Josling. We left Fenchurch Street with the 8.40 p.m. down train to Blackwall, running bunker in front. The signals were right for us all the way down, but just as we were approaching Stepney junction I saw a red light shown a few yards—about six yards I should say—in front of us. I do not think my driver saw it. I called out to him. He was riding on the left-hand side of the engine coming down, and he was working the brake at the time. He had brought the speed of the train down to about 15 miles an hour, preparing to stop at the station, and steam had been shut off for some time. After I called out he had no time to do anything, as we struck the other engine almost immediately. Our engine did not leave the rails. My driver was nipped between the bunker, which was driven back, and the reversing wheel. He never spoke, and died a few minutes afterwards. I was shaken, but nothing to speak of. We had seven carriages on, and all were fitted with the Westinghouse brake.

Isaac Matthews states: I have been over 29 years in the service of the Great Eastern Railway Company, and a guard for about 20 years. On the 1st August I came on duty at 2.15 p.m. at Blackwall to work till 12.30 a.m. between Blackwall and Fenchurch Street. I was on duty from 3.30 p.m. till 11.30 p.m. on the previous day. The 8.40 train of which I was guard was made up as follows:—tank engine, brake-van, one second-class, two first-class, and two third-class carriages, and brake-van, in which I was riding. The train was full in the rear, but I did not see the front part much before starting. I had no warning whatever of the collision. I think our speed was between 10 and 15 miles an hour at the time. We were slowing down for the station. No part of my train left the rails, and the engine only was damaged. No passenger complained to me of injury. I was thrown down by the shock and hurt my back, shoulder, and leg. I have been off duty for about a week.

Thomas Anderson states: I have been nearly 32 years in the service of the Blackwall and the Great Eastern Railway Companies. I have been ganger for 14 years. I have charge of a length of 1¼ miles from Burdett Road to Shadwell, including Stepney station and junction. I walk my length twice every week day and once on Sunday. On the 1st August I walked over the length in the morning and again between 3 and 5 p.m. Being Bank Holiday I was detailed for special duty until the traffic was over. Coming to Stepney junction station I passed over the junction for the fourth time during the day, about a

quarter of an hour before the accident, and everything was in good order. I was at Stepney station when the accident happened. I went at once to where the engine was standing. I found that the three left leading wheels were off the rails inside the proper right rail of the down line, and the corresponding right wheels were on the outside. I am certain they were in that position. After the engine had been moved, a little before 11 o'clock, I made an examination of the road at the crossing. I found marks of both the crossing points having been struck, and the shoulder chair, the point chair, and a C chair on the left side had the outer jaws knocked off. No other chairs were broken. No rails were broken, but the check rail opposite the broken chairs was bent two feet from the London end of it. I believe all these damages were caused by the engine dropping as she was being jacked on to the rails. I had looked under the engine as well as I could before it was moved at all, and I could not see any broken chairs then. On the other side there were seven chairs marked outside the rail, but none broken. I could find no mark on any of the rails except the bent check rail. I think the engine straddled the two points. I had gauged the road at that point on the previous Wednesday or Thursday. The gauge was exactly as it is now. It is slightly tight through the crossing, and that is what I consider the correct gauge for a crossing. The diamond was put on new on the 25th August 1891. The whole junction was relaid about three years ago. There is a cant of 1¼ inches. I cannot account for the engine having left the rails. It was not caused by any fault of the permanent way. I have known several engines off at the same place. No. 18 was off in 1889. Since that date a Great Eastern engine was off, a few weeks after No. 18 was off. This was a tank-engine running bunker in front. Before No. 18 ran off the following were off at different times:—No. 5 twice on one Saturday afternoon. No. 4 was off also, I think, but I cannot be sure. All these were running bunker in front.

Conclusion.

The accident to the London, Tilbury, and Southend engine, which led to the subsequent fatal collision with the engine of the Great Eastern down train, was of rather an uncommon character, and occurred under the following circumstances:—At 8.46 p.m. an up excursion train from Tilbury, made up of an engine and 15 passenger vehicles, arrived at the up Stratford platform at Stepney station, and, being too long to be accommodated at the platform, was, by the order of the station staff, which was communicated to the driver by the front guard, drawn forward for some yards so as to allow the tail of the train to reach the platform.

The engine, after drawing up, came to a stand upon the diamond crossing of the down line to Stratford, and the right-hand up line, upon which line it was going forward to Fenchurch Street, the then leading wheels of the engine, that is the proper trailing wheels, being, according to the driver, nearly at the elbow of the crossing. After standing for about a minute the driver started, upon receiving the proper signal from his guard, and the leading wheels of the engine almost at once struck against the fixed points of the crossing, the left leading wheel taking the wrong side of the point upon that side, and being followed by the two succeeding wheels, the bogie-wheels. when the engine was brought to a stand, being still upon the proper rails of the right-hand up line, not having quite reached the diamond crossing. The total distance run by the engine after it left the rails was very short, being about 17 feet only according to the driver, and about 20 feet according to the evidence of the foreman platelayer. Nevertheless, it was unfortunately far enough to foul the down Blackwall line, upon which a down Great Eastern train was approaching, but to foul it so slightly that when the London, Tilbury, and Southend engine was driven back for 2 or 3 feet by the collision which took place between the two engines, the leading carriages of the Blackwall train ran forward without being in collision with the London, Tilbury, and Southend engine at all. The Blackwall engine was also running bunker first, and at a speed of about 15 miles an hour, and the blow was of sufficient violence to drive in the bunker and to crush the driver between it and the reversing wheel, injuring him so badly that he died within a few minutes.

The evidence is on all points, except one, remarkably clear and consistent, but there is a curious discrepancy in the statements as to the exact positions of the six leading wheels of the engine after it came to a stand. According to the driver and guard of the London, Tilbury, and Southend train, the three left leading wheels were outside the proper right rail of the down Stratford line, the corresponding wheels on the right side being on the 4-ft. way, close inside the left-hand rail of the same line; but, according to the foreman platelayer, the left wheels were inside the right rail, and the right wheels were outside the left rail of the down line.

If the driver be correct the left leading wheel must, when it struck, and took the wrong side of the fixed point, have also mounted and run over the top of the left-hand running rail of the down line, and have been followed by the two succeeding left wheels, while the right wheels must have run over the check rail on that side; whereas if the foreman platelayer be correct the leading wheels simply ran astride of the two fixed points, and off on to the ballast at the heel of the crossing. Judging from the marks which were found upon the permanent-way, from the absence of any trace of a

flange upon the top of the rail on the left side, and, above all, from the evidence of the driver as to the manner in which the engine was lifted on to the rails of the right-hand up line after the accident, I have no doubt whatever that the foreman is correct in his recollection of the position of the wheels, and the accident is much less difficult to account for than it would be if the wheels had been in the position described by the driver.

I believe the accident to have been due to the fact that, before it started for the second time, the leading wheels of the engine were standing in such a position between the elbow and the facing point of the crossing that, immediately the engine moved off, they were for a distance of about 13 inches absolutely free to move to the right or left without being hindered from doing so by any check rail, and that, owing to the curve, the weight of the train was on the right-hand trailing buffer of the engine, which rather tended to divert the leading end of the engine towards the left, so that the left leading wheel, by what can be best described as a wriggle of the engine, got upon the wrong side of the left-hand point, the pulling of the right wheel off the right rail following as a matter of course.

It is not altogether an uncommon thing for goods waggons, when upon a diamond crossing, to be de-railed in this manner, but with an ordinary engine the leading wheels would usually be guided through the crossing by the frame of the engine being kept straight by the other engine-wheels.

The same remark would also apply, although perhaps in a less degree, to the leading wheels of a bogie, for the bogie frame would be kept straight by the trailing-wheels; but with an engine of the construction of the one in question, with a play of $1\frac{1}{4}$ in. in the axle of the leading wheels, such an accident as this is quite easy to understand. Indeed, it is manifest that, at diamond crossings, where there is necessarily a certain distance, more or less, where there is nothing to keep the leading wheels in their proper position, except the fact that they are being guided in the right direction by the action of the rear wheels upon the frame of the engine, there must be considerable risk of a pair of wheels free to move $1\frac{1}{4}$ in. to the right or left being deflected so as to take the wrong side of the facing fixed point.

I have, therefore, no hesitation in attributing this accident principally to the fact that the engine was running in a position in which it ought not to be run, viz., with the radial axle-wheels in front, and I trust that arrangements may be made to ensure that engines of this pattern will always be turned at the termination of their journey in each direction.

It is not quite clear what may have been the exact action of the spiral springs upon the axle on this occasion, for, as the engine started from rest they would not have been brought into play in the usual manner, but, when the engine was, at my request, placed upon the crossing, in the position described by the driver, the right-hand spiral spring was in compression, which would be accounted for by the fact that the left rail was the higher, and no doubt, when the engine started, this condition of the springs would have assisted to divert the left wheel to the wrong side of the point.

The servants of the companies concerned were in no way to blame for the accident, and those who were in a position to do so, did their best to avoid the collision which followed.

I could find nothing in the state of the permanent-way to account for the engine having left the rails, but, at the same time it is a curious fact that this is the fourth occasion in the last eight years upon which an engine has left the rails at this crossing, and I am informed that no London, Tilbury, and Southend engine has run off the rails at any other part of the line.

On all the above occasions the engines were tank-engines running bunker in front; in three instances the engines were London, Tilbury, and Southend engines, exactly similar to the one which ran off on this occasion; and in the fourth it was a Great Eastern tank-engine.

It is, therefore, satisfactory to learn that very shortly, owing to the widening of the line, this crossing will disappear.

At the time of the accident the driver and fireman of the London, Tilbury, and Southend engine had been on duty for $14\frac{1}{4}$ hours, and had to remain on for some considerable time longer, having to wait for orders at Fenchurch Street, and probably at any rate to return to the shed at Shoeburyness. Although they were standing idle for three hours in the morning at Barking, and for 2 hours 26 minutes at Tilbury in the afternoon, these hours were far too long.

The guard had been on duty for $13\frac{1}{2}$ hours, and he also lived at Shoeburyness, and would probably have been on duty for some hours longer. His hours of duty also

were too long, although he was resting for intervals of two hours at Shoeburyness and two hours at Tilbury. It must be remarked that these hours, and those of the Great Eastern ganger, who had to remain on duty until the traffic was over, which probably meant a tour of duty of about 16 hours, were exceptional, and due to the requirements of the bank holiday traffic; but, nevertheless, it appears from the evidence of the driver that he usually works from 12 to 13 hours.

I have, &c.,
F. A. Marindin,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Particulars of Damage to Great Eastern Rolling Stock.

Engine No. 327.—Both buffer-beams badly bent; right-hand trailing-buffer broken; right-hand injector damaged; right-hand air reservoir broken; Westinghouse brake-pipes broken; right-hand trailing sand-box broken; reversing-wheel broken; right hand-rail bent; coal bunker, cab, side-tank and foot-plate angle-iron require renewing; foot-plate (right-hand side) damaged; right-hand trailing-steps broken.

First-class carriage No. 310.—One buffer bent.

Damages to London, Tilbury, and Southend Rolling Stock.

Engine No. 26.—Hole in corner of tank; left-hand leading buffer (as running) knocked off; buffer-beam bent.

Leading brake-van.—Head-stock broken, and two buffers bent.

Printed copies of the above Report were sent to the Great Eastern and London, Tilbury, and Southend Railway Companies on the 8th September.

GREAT EASTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, S.W.,
9th September 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 22nd August, the result of my enquiry into the collision that occurred on the 21st August at Leman Street on the Great Eastern Railway, on which occasion, as the passenger train, which left Ilford at 10.44 p.m., was approaching Leman Street, it was run into by a light engine belonging to the London, Tilbury, and Southend Railway Company, which was travelling in the wrong direction on the left-hand up line.

Fifty-six passengers are reported to have complained of cuts, bruises, and other minor injuries. The head guard of the train was badly cut about the head, and the drivers and firemen of both engines were injured.

The passenger train consisted of engine No. 651 running bunker first, and nine vehicles, and it was fitted throughout with the Westinghouse continuous brake and the usual hand-brakes.

The light engine was No. 27 tank bogie engine, fitted with the Westinghouse brake and hand-brake. It was running chimney first and was on its way home.

Both the engines and the train sustained considerable injuries, for details of which see Appendix.

Description.

Between Fenchurch Street and Leman Street stations there are three main lines, viz.,—two up and one down, the latter being between the two up lines, and the collision occurred on the left-hand up line alongside of the platform belonging to this line at Leman Street station. At Fenchurch Street there are five platform lines, all converging on to each of the three running lines just described, the signalling arrangements and the connections being so arranged that trains can arrive at or depart from each platform. Between platform lines 3 and 4 there is a sixth line of rails, known as "the middle road." There are connections between this road

and lines 3 and 4 at the ends of the platforms, which enable an engine which has brought a train into either of the platforms to run round its train and get out of the station, either on to the turn-table sidings or on to the down main line, while the train remains at the platform. The points and signals for all the connections between the various lines and sidings, in or near the station, and between these and the three running lines are worked from Fenchurch Street signal-box, which is just outside the station.

The only connections which need be referred to in this report are as follows:—No. 88 points leading from No. 5 (Woolwich) platform line to the down main line; No. 66 points leading from No. 4 (Tilbury) platform line to the down main line; Nos. 28 and 29 points leading from the middle road to the down main line; and No. 41 cross-over road between the down main and left-hand up lines. There are starting-signals at each platform, and there is an advanced starting-signal, No. 50, on the down main line in front of all the connections from the platform lines to the running lines. The interlocking is so arranged that when the signals are lowered for a train to pass from either No. 5 or 4 platform on to the down main line, No. 41 cross-over road must be set so as to act as a trap, and divert on to the up line any engine which might attempt to come out of the middle road on to the down line through 28 and 29 points. In other words, 41 lever must precede both 88 and 66 levers. There is no fixed signal or disc for coming out of the middle road on to the main line, but drivers receive a hand-signal from the signalman for this operation, and before giving such a signal it is the signalman's duly to see that the line is clear and the road properly set as far as the advanced starting-signal No. 50.

There are of course a large number of other points, locking bars, and siding connections, but they do not concern the occurrence under enquiry.

The following distances should be noted:—

From the starting point of No. 27 engine on the middle road to the point of collision about - - - - -	650 yards
From No. 41 cross-over road to same point - - -	540 ,,
From the facing-points, London Dock branch, to the same point about - - - - - - - -	122 ,,

Evidence.

Thomas Watts, signalman.—I have been in the Great Eastern Company's service 13 years, and signalman all the time, and I am stationed in Fenchurch Street signal-box. I have been in that box seven years. On the 21st August I came on duty at 10 p.m. At 11.7 p.m. an up passenger train from Blackwall passed my box on the left-hand up road, and it was to run into No. 3 platform, Fenchurch Street station. For this purpose I had to pull 41 lever for the crossing from the left-hand up road to the down road, and No. 29 lever for the crossing from the down road to No. 3 platform line, and I also pulled the four locking bar levers necessary for the operation. After the train had passed my box I replaced 43 lock-bar ready to replace at cross-over road lever. But I found I could not get 41 back because 88 lever was over to make the road for an outgoing Woolwich train. My mate had done this; I then put back the rest of the lock-bars and 29 point lever. I went up to the end of the box to pull No. 7 lever which releases the frame at the end of the station, so as to enable the engine from the Blackwall train to get on to the middle road. At the time this was done there was already a Tilbury engine standing in the middle road ready to go away, and the Blackwall engine was placed behind it on the middle road. While I was doing this the Woolwich train went away from No. 5 platform, my mate having given him the signal to start. Then a Tilbury train went out from No. 4 platform and my mate set the road for that also, while I was attending to an engine going on to the Blackwall engine pit out of No. 2 platform. In order to set the road for the Tilbury train, No. 88 lever had to be replaced to its normal position, but No. 66 lever had to be pulled. After the Tilbury train had gone my mate's turn of duty ended, and I went to that end of the box and put the levers for that road back. As soon as the train was clear, I called down to Haydon Square box to offer the Tilbury engine which was standing in the middle road, and it was accepted. This was about 11.13 p.m. I then pulled over 28 and 29 levers to make the road for the engine from the middle road on to the down main. I then gave the driver a hand-signal to go away, having previously lowered No. 50 advanced starting-signal. The driver then started away, but I had not replaced No. 41 cross-over road. After the engine passed my box I went on with my work, and was setting the road for the next up train to run into No. 2 platform. To do this I had to pull 14, 22, and 23 and 12 levers. The up train was offered to me at about 11.14, and I then went to pull off the slot on the Haydon Square up signal, and I then noticed for the first time that No. 41 lever was still over. I at once put it back, but it was too late, as the light engine had passed the box and I knew that it must have got on to the up road. I could do nothing to stop it. There has been no complaint against me during all the years I have been signalman. I am alone after 11 p.m. in the box, but the work is not heavy after that time unless the trains are running late. There are about half a dozen trains to deal with between 11 p.m. and 12 midnight. The box is an eight-hour box. There are two men in the box from 5.30 a.m. till 11.30 p.m. on week days, and on Sundays from 8 a.m. till 11 p.m. If there was a signal for coming out of the middle road through 28 and 29, and if this was interlocked in the usual way, I could not have made the mistake. I hand-signalled the engine out in the customary manner. It has struck me that a disc would be better than a hand-signal, but I have never mentioned the matter to anyone in authority.

Henry Hale, driver, states: I have been in the London, Tilbury, and Southend Company's service 19 years, 12 years as driver, and seven as fireman. On the 21st August I came on duty at 7.50 a.m.,

having come off duty about 9 p.m. on Saturday night. If the collision had not occurred I should have signed off at 11.45 p.m. on Sunday. I had reached Fenchurch Street at 10.38 p.m. with the 8.37 train from Pitsea, being 33 minutes late. I ran into No. 4 platform, and I was then uncoupled and put on to the middle road ready to go away home. I stood there till 11.11 p.m., having been there about 20 minutes. I then got a hand-signal from the signalman to go away. He waved me out with a white light, which is the signal we always receive. When I saw the advanced starting-signal it was off for me, and all the signals up to Leman Street were off as I passed them. As I passed the cabin I was running at about five or six miles an hour, and as soon as I saw all the signals were off for me I gave the engine more steam. As I passed the box I was watching the signals and I never noticed that I passed through No. 41 facing-points on to the up road. I was directing my mate about that time to put a bit on to the fire. It never struck me that I was on the wrong road. It was a dark night, and being Sunday there were no lights about. I was running chimney first. My engine was a 10-wheeled tank-engine, with leading bogie, and two and four wheels coupled, and trailing radial-axle. I daresay I approached Leman Street at 15 or 16 miles an hour, or perhaps more. When I reached the London Dock junction, which is about 50 or 60 yards from Leman Street station, I thought for the first time I was on the wrong road. It seemed to me that I was too close to the buildings on the right-hand side of the line. Looking through my window I could then see the lights of the up train in front of me, and I at once applied the Westinghouse brake, and put the reversing lever out of gear. I sanded the rails, and I think I reduced the speed to about five miles an hour before the collision. I cannot say what the distance was from the junction just named to the point of collision. I applied the brake hard and did all I could to stop. When I reached the platform several people shouted and showed me red lights, but I had already done all I could. I was thrown on to the fire-box by the collision, and my elbow was hurt and I am still on the sick list. My mate had been firing for me four days, and I found him intelligent and willing. As a rule we do not require any coal put on to take a light engine home from Fenchurch Street, but on this occasion we did, as we had been standing some time in the station. I do not consider my mate a thoroughly competent fireman, and as he has not been firing long he wants looking after. The four coupled wheels on my engine are braked. I do not know the adhesive weight on those four wheels. I had about 50 lbs. air pressure when leaving Fenchurch Street, and I had not used any of this before reaching Leman Street. My donkey engine was not working, as steam was rather low, and the engine being light I did not think it necessary. I had just below 100 lbs. of steam. I had had the donkey working while I was waiting in Fenchurch Street. The brake acted well. I saw Inspector Greenfield at Leman Street. I do not remember having any conversation with him with respect to the cause of the collision.

Frank Dann, cleaner, states: I have been in the London, Tilbury, and Southend Company's service two years three months, and I have been firing regularly for a fortnight and on and off for six weeks. I have been firing for driver Hale for four days. I am 16 years and two months old. On Sunday 21st August I signed on at 7.20 a.m., having come off duty at 9 p.m. on Saturday night. I corroborate all that my driver has stated, but I cannot speak as to the speed at which we were running, and I did not see my mate apply the sand to the rails. I did not know what was wrong till we were close to the train which we ran into, and as soon as I saw the train we were into it. I was thrown off my engine on to the ballast, and was cut about the head. I was insensible for a short time.

Greenfield, chief inspector: I have been in the Great Eastern Railway Company's service 29 years, and I have been district inspector 15 years. On Sunday, 21st August, I was sent for at about 11.45 p.m. in consequence of the collision. I found the train standing in the Leman Street station, but all the passengers had been removed. I spoke to the Great Eastern Railway driver. He said he was running into Leman Street with the signal off for him, preparing to stop in the station, when he saw an engine close upon him, immediately before the collision. He had had no time to try and stop his train. I then went to the Tilbury engine, which was in the Midland siding, and spoke to the driver. I asked him how the mishap had occurred. He said he had started from the middle road at Fenchurch Street, having received a hand-signal to do so, and that he saw all the signals right for him, and he went away and did not know he was on the wrong road till his attention was called to it by the shouting and red lights at Leman Street. I asked him how it was he had been so far without finding out he was on the wrong road. He said his mate was a youngster, and was putting a bit of fire on, and he was looking after him.

Conclusion.

The circumstances connected with this collision are perfectly clear. At 11.7 p.m. an up passenger train from Blackwall passed the Fenchurch Street signal-cabin on the left-hand up road to run into No. 3 platform. In order to enable it to reach the platform, Nos. 41 and 29 points had to be pulled over, besides various locking-bar levers. After it had passed, signalman Watts replaced all the levers, with the exception of No. 41, in their normal position. He was unable to replace No. 41, because No. 88 points had been set by the other signalman for a Woolwich train to leave No. 5 platform, and as has already been explained No. 41 points precede, and act as a trap to protect No. 88.

When the Blackwall train ran into the station there was a Tilbury engine (No. 27) standing on the middle road, and the signalman was anxious to get it out of the way, so that the Blackwall engine which had just arrived with the train might get out over the same road. As soon as the Woolwich train had left, No. 88 lever was replaced, and No. 41 points might have then been put back in their normal position. But a Tilbury train had to leave No. 4 platform, and this required No. 66 point lever, which also is preceded by No. 41, to be pulled, and consequently No. 41 lever remained over. When the Tilbury train had left, the second signalman's turn of duty ended, and Watts was left alone in the box. The latter then replaced the levers

connected with the road for the Tilbury train, but he forgot to replace No. 41 lever which was now free. As soon as he received "Line clear" for the train, he set the points leading from the middle road to the down main line and offered the light engine to the next cabin. As soon as it was accepted he gave a hand-signal to the driver of the Tilbury engine, which was standing on the middle road, to go right away, and at the same time lowered No. 50 advanced signal.

The driver obeyed the signals and started away to the shed, passing over points Nos. 28 and 29 on to the down line. The engine then travelled on the down line as far as 41 points, which, being set for the cross-over road, turned it from the down line to the left hand up main line. Shortly after this, signalman Watts discovered the mistake he had made, by finding No. 41 lever pulled over, and he then became aware that the engine must have gone away on the wrong line. But it was too late for him to do anything to stop it, as by this time it was far away. It was a dark night, and being Sunday there were no lights about in the goods yard and sidings, and the driver did not notice that he had passed through the crossing from the down to the up line. When therefore he found the signals off for him (the engine having been block-signalled from box to box in the proper way) he gave his engine steam and hurried home. When he was close to Leman Street, he thought he was rather too near to the buildings on the right-hand side of the line, and it came into his mind that he was on the wrong road. He was then travelling, according to his statement, at about 15 or 16 miles an hour, but as a matter of fact the speed must have been much greater than this. Immediately after this he saw the head-lights of a train in front of him, which turned out to be the 10.44 p.m. up train from Ilford, which was approaching Leman Street station. The driver at once applied his Westinghouse brake and did all he could to stop; and he says he reduced his speed to about five miles an hour, when his engine ran into the engine of the approaching train. Several of the railway company's servants who were on the platform, seeing what was about to happen, shouted to the driver of the light engine and waved their hand-lamps, but he had already done all he could to avert the collision, which occurred as the Ilford train was drawing up at the platform. The scene must have been an alarming one both to those on the platform, and to the passengers in the train. Fortunately the collision was unattended by loss of life, or serious personal injury.

The collision was due to the fact that signalman Watts forgot that No. 41 lever was pulled over, thus setting the cross-over road from the down to the up line, at the time he gave the signal to driver Hale to go away with his light engine.

Although forgetfulness on the part of a signalman cannot be overlooked, a momentary error such as this should not, I think, be judged too severely. Moreover, signalmen are, at the present time, so accustomed to depend upon the interlocking of points with signals, that the absence of any fixed signal or disc for coming out of the middle road into the down line, may be regarded as some excuse for his mistake. Had such a signal been in existence, it would of course have been interlocked with No. 41 points, and such an occurrence as the one under consideration would have been impossible. Signalman Watts had been on duty about one hour and 11 minutes at the time he made the mistake. He has been with the Great Eastern Company 13 years, and when giving his evidence, he made no attempt to evade his responsibility.

It seems at first sight somewhat unaccountable that driver Hale, of the London, Tilbury, and Southend Company's service, should have travelled 540 yards before he found out that he was on the wrong road, but such an occurrence is not altogether unusual. Doubtless the engine was not travelling at any great speed when it passed through the facing-points of the cross-over road, and the lurch of the engine as it took the points might escape notice. The dark night and the absence of lights in the goods yard would render surrounding objects less easily discernible. Moreover, he had a young and inexperienced fireman whom he was instructing in his duties, the fire having got rather too low during the time the engine had been standing in the station, and it may be, as he states, that as he approached Leman Street he discovered for himself the mistake that had been made, and that his attention was not called to it for the first time by the shouting of the people on the platform. I am, however, of opinion that he considerably under-estimates the speed at which he was then running as, had he been going, as he says, only at 15 or 16 miles an hour, he should have been able to have stopped his engine in a shorter distance. Taking all the facts into consideration I do not think driver Hale can be fairly charged with carelessness on this occasion. I feel it my duty however to draw attention to the hours of duty of this man on the two days preceding the collision. On Saturday 20th August he left duty at 9.40 p.m. after having been at work for 11 hours

50 minutes. On Sunday, 21st August, he came on again at 7.20 a.m., *i.e.*, after nine hours 40 minutes rest, and he had been at work for 16 hours at the time of the collision. It appears to me to be impossible to expect from a driver who has been at work 16 hours, that constant watchfulness and vigilance which are enjoined in the rule book, and which are essential for the public safety.

It would also appear desirable that lads of 16 years of age, and with little or no experience, should not be trained as firemen on the engines of passenger trains.

No blame whatever attaches to the driver of the Ilford train, who was quite unaware of the approaching engine until the moment of the collision. Luckily the train was being pulled up at the platform when the two engines met.

As a consequence of this collision it becomes a matter for consideration whether it is advisable to use No. 41 cross-over road as a trap to protect the down main line, as by the use of this trap an engine or a train is liable to be turned upon the up line in the face of an incoming train, and the security of one line is obtained by means of a great risk to the other line, and whether also it is not desirable to provide a properly interlocked disc-signal for allowing an engine to run out of the middle road on to the down main line.

I have, &c.,

H. A. Yorke,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Damage Sustained by the London, Tilbury and Southend Engine No. 27.

The ends of main frames bent; buffer-beam broken; two bogie splashers bent and broken; two wrought-iron brackets in frame carried away.

Particulars of Damage to Great Eastern Rolling Stock.

Engine No. 651.—Both frames and buffer-beam bent at trailing end; both buffers broken; outside angle-irons broken both sides; coal-bunker damaged; brake-screw column broken; Westinghouse pipe broken.

Brake third, No. 292.—Two headstocks, two top step-boards, one longitudinal, three end lights, eight floor boards and door panel broken, and two buffers bent.

Third-class carriage No. 321.—One headstock and one end quarter panel broken and two buffers bent.

Third-class carriage No. 219.—Two buffers bent.

Third-class carriage No. 291.—Two headstocks, one side light, two step-boards, one step-board bracket, two buffer-blocks and two side chains broken; two buffers and draw-bar bent.

Third-class carriage No. 319.—Two headstocks, two step-boards and one brake-cylinder cover broken and two buffers bent.

Third-class carriage No. 581.—Two headstocks and two buffer-blocks broken and two buffers bent.

First-class carriage No. 295.—Two buffer-blocks broken, and two buffers bent.

Second-class carriage No. 315.—Two middle bottom panels broken and two buffers bent.

Second-class carriage No. 144.—Two buffers bent.

Printed copies of the above Report were sent to the Great Eastern and London, Tilbury, and Southend Railway Companies on the 3rd October.

GREAT EASTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
October 3rd, 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 15th ultimo, the result of my enquiry into the accident that occurred on the 7th idem at Haughley junction on the Great Eastern Railway.

On this occasion, as the 6.10 p.m. special train from Doncaster was passing through the above junction (in the trailing direction), the tender and the rest of the train left the rails, and were dragged along the ballast by the engine, which remained on the line, a distance of about 300 yards before they all came to a stand.

There were only about 17 passengers in the train, and none of them are reported to have complained of any injury.

The train consisted of a six-wheeled engine (No. 736), a six-wheeled tender, and seven vehicles, of which the first and last were third-class brake-carriages. All the carriages, with one exception, had six wheels, the exception being the first-class carriage, which was the third vehicle from the end of the train, and which had only four wheels.

The engine was in no way injured, but the tender and the rest of the train sustained considerable damage.

The permanent-way was displaced and torn up for a distance of 300 yards, starting from a point 16 yards clear of the junction, there being 600 chairs and 112 sleepers broken.

For details of damage to the rolling-stock and permanent-way, see Appendix.

Description.

Haughley station is situated on the main line from Ipswich to Norwich, and about 150 yards from the north-west end of the station there is a junction with the branch line to Bury St. Edmunds and Cambridge, both lines being double. Approaching Haughley along the branch the line has a curve to right of 40 chains radius, extending close up to the junction, while the main line from Norwich has a curve to the left. From the junction onwards through the station the line is straight. Elmswell, the next station to Haughley on the Cambridge branch, is $3\frac{1}{2}$ miles distant. Immediately after leaving Elmswell there is a falling gradient of 1 in 132 for a distance of $1\frac{1}{4}$ miles; then an ascending gradient of 1 in 132 for 57 chains; then an ascending gradient of 1 in 360 for 12 chains; then 15 chains of level; and lastly a falling gradient of 1 in 132 for 1 mile 11 chains up to the junction at Haughley, the same rate of inclination extending also beyond the junction through Haughley station. The super-elevation of the outer rail on the curve near the junction is about $2\frac{1}{2}$ inches, but at the junction itself, owing to the intersection of the various lines, there is, and can be, no super-elevation, and each pair of rails is transversely level.

The permanent-way at the junction, which was not affected by, and which at the time of my visit had not been touched since, the accident, is in good order. It was laid 10 years ago, is true to gauge, and the sleepers are sound. The rails weigh 80 lbs. to the yard, and the chairs 43 lbs. each, the latter being each fastened to the sleepers by two spikes and two trenails. There are 14 sleepers under the length of rails nearest to the junction, 12 sleepers to each of the three next lengths, and after that 11 sleepers per length of rail.

The switch rails are 12 ft. long, and the divergence from the straight in this length is $4\frac{1}{4}$ ins. There is a check-rail 18 ft. 5 ins. long alongside the inner rail on the straight, just outside the points.

The train to which the accident occurred was travelling from the direction of Elmswell, and it passed safely through the trailing-points of the junction on to the main line at 10.37 p.m. It was not booked to stop either at Elmswell or Haughley, but it had been delayed by signal at the former place, and was three minutes late on reaching Haughley. The first mark of any kind indicative of the wheels having mounted the rails was discovered after the accident on the top of the check rail, 14 ft. from the points. This mark was $10\frac{1}{2}$ ins. long, and was parallel to and three-quarters of an inch from the right-hand edge of the check-rail. The next mark occurred on the top of the right-hand or inner running rail, about 16 ft. from the mark on the check-rail, and this extended obliquely for a length of 14 ft. 10 ins. from the centre of the rail to its outer edge, and then there was a mark 4 ft. long along the outer face of the same rail. Beyond this point the outer jaws of the inner chairs were broken for some distance, and one length of rail was turned over on its side, the fish-joints being broken and the fish-plates scattered. The chairs on the left-hand side had wheel marks on their inner jaws for a distance of 34 ft. from a point opposite the termination of the oblique mark just referred to on the right-hand rail, and there were several oblique wheel marks on the top of the left-hand rail, corresponding to the rail on the right, which was turned over on its side. Beyond this point the outer chairs also were broken, and the road torn up and destroyed.

It seems clear from these marks that one of the vehicles of the train first left the rails and dropped on to the ballast at the point where the oblique mark already described terminated on the outer edge of the right-hand or inner rail, and where the chairs first showed signs of injury. The track of the wheels in the ballast then proved that the train continued its course with its left-hand wheels in the four-foot, and the right-hand wheels in the six-foot way. The train then gradually edged away towards the other (or down) line of rails, until it reached the cross-over road between the up and down lines, which is close to the ends of the platforms. This diverted the train back towards and across its own (or up line), causing it to pass close to a signal-post, and then to strike the corner of the up platform, thereby tearing up the asphalte and destroying the brickwork. The train then turned to the right, and ran parallel to

its own line of rails and close to them through the station, and finally came to a stand with its engine 40 yards beyond the Ipswich end of the station, and its tail under the foot-bridge which connects the two platforms.

The position of the train was then as follows:—the engine had all its wheels on the rails, the tender had all six wheels off the rails, the third-class brake next the tender had its leading wheels off, the next carriage its trailing wheels off, while the five remaining vehicles had all their wheels off.

The engine is six-wheeled, with four wheels coupled. The leading wheels are 4 ft. in diameter, having axle-boxes allowing $1\frac{1}{4}$ ins. lateral play, and the driving and trailing wheels are 7 ft. in diameter. The tender has six wheels, 4 ft. 1 in. in diameter.

The weights of the engine and tender when loaded are 42 tons 0 cwts. 1 qr., and 30 tons 12 cwts. 2 qrs. respectively, and these weights were distributed as follows, when the engine last left the shops, viz.:—

Engine.				Tender.			
	Tons.	cwts.	qrs.		Tons.	cwts.	qrs.
Leading wheels -	14	8	2	Leading wheels - -	9	2	0
Driving „ - -	14	1	0	Middle „ -	10	8	2
Trailing „ - -	13	10	3	Trailing „ - -	11	2	0

The full load of the tender is 4 tons of coal, and 2,640 gallons of water, and at the time of the accident it contained 2 tons of coal and 1,980 gallons of water.

The tender has been weighed within the last few days, and the weights on the wheels were then ascertained to be—

—	Left side.			Right side.			Total.		
	Tons	cwts.	qrs.	Tons	cwts.	qrs.	Tons	cwts.	qrs.
Leading wheels - - -	4	5	0	3	17	1	8	2	1
Middle „ - -	4	5	1	3	12	2	7	17	3
Trailing „ - - -	4	5	0	4	17	2	9	2	2
Total - -	12	15	1	12	7	1	25	2	2

The springs of the tender have also been examined, with the following results, viz.:—

—	Left side.	Right side.
Leading - - - -	No defect - -	3rd plate broken, old fracture.
Middle - - - -	5th plate broken, new fracture.	9th „ „ new „ 8th „ „ „ „ 10th „ „ „ „ 11th „ half-broken, new fracture. 12th „ broken, old fracture.
Trailing - - - -	No defect - -	*4th „ „ „ „ *8th „ „ „ „

* These fractures were at the slot holes about four inches from the ends of the plates. All the other fractures were at the centre holes.

The engine was new in June 1888, and both the engine and tender were last repaired in April 1892. They have run 169,750 miles altogether, of which $20,658\frac{1}{2}$ miles have been performed since April. At the time they left the shops in April last the tender springs were in perfect order. The flanges and wheels of both the engine and tender are in good condition, and there was no indication of any fault in them or in the wheels of the carriages composing the train, which would account for the accident.

None of the couplings were broken by the accident, nor were the connections for the continuous-brake separated.

Evidence.

William Devereux, driver, states: I have been in the Great Eastern Railway Company's service 29 years, and have been 20 years driver. On September 7th I came on duty at 6 p.m., having come off duty at 9 a.m. the same morning. I was driving engine No. 736, having four wheels coupled, 7-ft. driving-wheels, plain leading-axle, and six-wheeled tender. It was fitted with the Westinghouse brake, working blocks on the driving-wheels, and on the six wheels of the tender, and it had a hand-brake on the tender. I left March at 8.43 p.m. with a special train from Doncaster. We left at right time, and stopped at Ely, Newmarket, Bury, and Elmswell. We left Elmswell about 10.32, and we passed the Haughley junction cabin at 10.37. I had noticed nothing wrong in the running of the train all the evening. When I reached Haughley the signals were all off, and I was running about 25 to 30 miles an hour through the junction. My average speed from Elmswell would be about 42 miles an hour. Elmsworth is 3¼ miles from Haughley junction signal-cabin. I felt nothing wrong on passing through the points, but about 10 or 15 yards after I passed through the points I found the tender was off the road. My attention was attracted to it by the noise the tender made. I stood still, as I dared not move. I had my hand on the brake, but I did not apply it. I kept the lever in the release position. I did not apply the brake because I was afraid of the tender striking the platform, and of the rear vehicles of the train telescoping those in front. The engine came eventually to a stop near the station signal-cabin. I had about 75 lbs. of pressure in my Westinghouse brake, as far as I recollect. I do not know that anyone applied the brake. I know the rear guard did not apply it, and I do not think the inspector in the front van applied it either. The distance from the junction points to where the engine stopped is 315 yards. I did not know that anything else was off the road besides the tender, and I could not go to the side to look over. I felt nothing unusual as the engine passed through the points, and I have no idea whatever as to what caused the train to leave the road. The tender was in good condition. I have been driving the same engine for six months, and the same tender has been with the engine all the time. When I came to a standstill the engine was on the rails, the tender was off all six wheels, and I think all the rest of the wheels of the train were off the line too, but the road was so knocked about that I cannot speak with certainty. I feel sure that I was not running at more than 25 or 30 miles an hour through the junction. I know the road thoroughly well. I used to run over it regularly three years ago, but not so often of late. I do not think I came through the junction faster than usual. I know Rule 284A as to reducing speed through junctions so as to ensure a steady passage of the train. We were about three minutes late, owing to the stop for signals at Elmswell. I was not trying to make up time. I have always thought this junction rather a nasty one. The engine always seems to kick here more than at most other junctions, but I have never come off at the junction before. As I approached the junction I shut off steam about the distant-signal, and I applied the brake so as to reduce the speed. I then eased the brakes off close to the junction, but I did not apply steam, and I had my hand on the brake-handle in the release position when the tender first came off. We never do put on steam between the distant-signal and Haughley station coming through the junction, and I did not do so on this occasion. I knew the train was fitted with the Westinghouse brake.

Fred Pizzey, fireman, states: I have been in the company's service nine years, and three years fireman. On the 7th September my hours of duty were the same as my driver's. My driver shut off steam on approaching Haughley after passing the distant-signal, and he applied his brake and reduced the speed to about 30 miles an hour passing through the junction. I daresay we were going about 50 miles an hour before we reached the distant-signal. I felt nothing unusual when passing through the junction, and I did not notice anything wrong until we were near the platform, when the coal began to fall off the tender. I did not speak to my driver, but I got up on to the seat to get out of the way of the coal. I did not see the tender strike the platform, but I thought the brake-van was off by the way it was jumping about. I have been firing for Devereux for 12 months and I know this junction well. I have thought there is a nasty twist at this junction, worse than at other junctions. My mate did not put on steam again after passing the distant-signal.

Inspector Chapman states: On the 7th September I accompanied the special race train from Doncaster. We left Doncaster to time, and we ran to time till reaching Elmswell, where we were stopped by signal and lost about three minutes. We were running about 40 miles an hour when we reached the distant-signal for Haughley junction. I was riding in the front van. I did not notice when the driver shut off steam, as there is not much to be felt with a train closely coupled up, and I did not notice the driver applying the brake. I did not feel it or hear the blocks against the wheels, but I did not look at the gauge. I did not notice any reduction of speed on approaching the junction. I did not think the driver was running too fast, and there was only the usual jerk on passing from the curve to the straight. Just after passing the points, I was sitting down on the platform side and was about to look at my watch when I saw sparks flying from the tender-wheels. I at once tried to reach my brake, but was thrown down. I made another attempt and was thrown down again; the third time I did succeed in reaching the brake, and I applied it at once, and directly after that the train stopped. I never noticed this junction as being worse than any other. I do not think we came through the junction at any different speed to what is usual. I did not notice any perceptible reduction in the speed when we approached the junction.

Albert George Pettit, guard, states: I have been in the company's service 10 years, and I have been acting guard 2½ years. On the 7th September I came on duty at 6.20 a.m. having come off duty at 7 p.m. the previous night. I worked the racing special train from Ipswich to Doncaster in the morning, and I left Doncaster again at 6.10 p.m., right time. The Westinghouse brake was connected up throughout the train. At March one portion of the train went to Yarmouth, and the remaining portion came on to Ipswich. The brake was tested before leaving March and was working all right. We left Elmswell at 10.32 p.m. about three minutes late and on approaching Haughley junction we were running about 30 miles an hour. I did not feel the driver shut off steam, but I felt him apply the brake between the distant and the home signals. I did not notice whether speed was much reduced or not. I did not think we were running faster than usual when we reached the junction. When we passed through the points the train was going at about 25 to 30 miles an hour. After I got over the points I felt the van lurch, and I got up to put the brake on and was thrown down. I had no

chance of getting up again until we stopped. I have been over this junction several times, and I have thought it a very bad junction, but I have not known anything come off before. I was in charge of the train and riding in the last brake-van.

E. Isaacs, foreman platelayer, states: On the 7th September I was acting as sub-inspector of the permanent-way. About 8.30 a.m. I walked over the junction at Haughley, towards Bury, and inspected it as I passed along. Everything seemed all right. The road is a strong one. There are 14 sleepers to the length of rails next the points, and 12 sleepers to each of the next two lengths, and after that 11 sleepers to each length as usual. I did not test the gauge because it did not look as if it required it. I have had no complaints about this junction. I do not know when any work was last done on it.

David Nunn, ganger, states: I have been with the company 31 years, and 25 years ganger. I have been stationed at Haughley for 20 years. I have never had any complaints about the junction at Haughley as regards trains coming off the branch. About five weeks ago some slight repairs were done near the junction, but nothing has been done at the junction for two months. I had tested the gauge the day before the accident, and it was quite right. No new sleepers have been put in lately, as the road is a very good one. The road was put in about 10 years ago. I came on to the spot about half an hour after the accident. I at once went to the junction and tested it and found it perfectly right. About 15 yards from the points I noticed the first broken chair, and from there to the station the road was very much knocked about. I do not know what the curve is outside the junction, but the cant of the rails on the curve is about two inches. I cannot account for the accident at all. Nothing has been done to the junction since the occurrence. I have heard drivers complain about the junction when going on to the branch, but not as to coming off the branch. They said it jerked a little running on. The switch rails are 12 ft. long. I think the drivers sometimes run through the junction too fast, and I have told them so.

Conclusion.

It is impossible to state with certainty the cause of this accident, though personally I have not much doubt on the subject. There is nothing in the condition of the permanent-way at the junction to account for it. The junction itself was in no way injured, and was in the same state when I saw it as on the date of the disaster. Moreover, the marks which I have already described prove that the train did not leave the rails until it had passed through the points and was on the straight line. Owing, however, to the short length of the switch rail and to the impossibility for reasons already given of providing the usual super-elevation of the outer rail at this point, the junction is suitable only for very moderate rates of speed.

An examination of the engine discloses no fault to which the occurrence can be attributed, and it is quite clear that the engine never left the rails at all. But as regards the tender it must be noticed that, omitting all new fractures which may fairly be attributed to the accident, there were four old fractures of the spring plates, all of them on the right-hand side., and of which two were across the centres of the plates. Moreover, the distribution of the weights on the wheels of the tender when it was weighed at Stratford after the accident, was found to be uneven. The left-hand wheels carried 8 cwt. more weight than the right-hand wheels, and, while the right hand leading and middle wheels carried less weight, the right hand trailing wheel carried more weight than any others. Such a distribution of weights would probably have a tendency to produce twist in the frame of the tender, and to lift the right hand leading wheel off the rails. This uneven distribution of weight, as between the two sides of the tender, would be intensified by the centrifugal force of the whole mass, when passing from the curve to the straight, and still further by the movement of the water in the tender towards the left due to the same force.

The primary action of centrifugal force would be of course to cause the flanges of the outer wheels to hug the outer rail of the curve. The next action would be to tilt up the inner side of any vehicle passing round the curve to a greater or less extent, according to the speed at which the train was travelling. It is to counteract this latter action of centrifugal force, and restore the balance to the train, that super-elevation of the outer rail is necessary. There being no super-elevation at the junction in question, the inner wheels of the train must necessarily have been lifted off the rails. In the case of the tender this action would be more marked, owing to the uneven weights on its wheels, which have been described, and it seems quite conceivable, that if the speed was at all high it would cause the tender to run through the junction on its three left hand (or outer) wheels alone, while its inner wheels would not be touching the rails at all.

On passing from the curve to the straight, with its wheels in such a position, a considerable jerk to right would take place, and the tender would for the moment be still more tilted, and when it was fully on the straight, and commenced to regain its stability, the inner wheels might fail to resume their proper position, and the flanges might come down on the top of the rails instead of alongside them. The marks on the top of the rails bear out some such theory. There are no signs of any gradual mounting of the rails. All indications point to the wheels having been in the air, and suddenly dropping on to the tops of the rails. The mark on the check rail began and

ended suddenly, being parallel to and near the edge of the rail, as though a wheel had just skimmed the top of the rail at that point, and had then been lifted again. The second mark, which also commenced suddenly on the top of the running rail, had the appearance of the flange of a wheel having dropped upon the rail at that point, and, after travelling along it for a short distance, of having run off on the right-hand side.

Driver Devereux says that his average speed from Elmswell was 42 miles an hour, and that on reaching the Haughley distant-signal he shut off steam, applied his brake, and reduced the speed to 25 or 30 miles an hour by the time he reached the junction.

Fireman Pizzey puts the speed outside the distant-signal at 50 miles an hour, and at 30 miles an hour through the junction.

Inspector Chapman, who was in the front brake compartment, estimates the speed outside the distant-signal as 40 miles an hour, and he says he felt no application of the brake, and no perceptible reduction of speed on reaching the junction.

Guard Pettit says that the train was running at 30 miles an hour when approaching the distant-signal, that he felt the driver apply his brake, but that he did not notice whether the speed was much reduced or not. He thinks the speed at the junction was about 25 to 30 miles an hour.

There is therefore the usual diversity in the estimates of speed, which vary from 50 to 30 miles an hour outside the distant-signal, and from 40 to 25 miles through the junction. I do not attribute wilful misstatements to any of the witnesses, but all estimates of speed even from experienced men are unreliable unless corroborated in some way.

The distance from Elmswell to Haughley is $3\frac{1}{2}$ miles, and the train took exactly five minutes to run that distance. The average speed would therefore be 42 miles an hour, as correctly stated by the driver. But as the train started from rest, and as there are ascending gradients of 1 in 132 and 1 in 360 for distances of 57 chains and 12 chains respectively, it is clear that the speed over some part of the journey must have been below, and at other parts have exceeded 42 miles an hour. There is a falling gradient of 1 in 132 for a distance of 1 mile 11 chains before reaching the junction, and as the driver had steam on as far as the distant-signal, a high rate of speed would soon be attained on such an incline. I therefore am inclined to accept the fireman's estimate as to speed, and consider it probable that the speed at the distant-signal was about 50 miles an hour.

Nor can the speed have been very much reduced at the junction, for inspector Chapman did not feel any application of the brake, and noticed no reduction of speed, and guard Pettit, who felt the brake applied, states that the speed was reduced from 30 miles outside the signal to between 30 and 25 miles at the junction—a reduction, at the most, of only five miles an hour. Assuming, therefore, that the driver applied his brake after passing the signal, it seems clear that the application was very slight, and I am forced to the conclusion that Devereux under-estimates his speed both before and at the time of passing the junction. The fact that the train ran 300 yards with all the wheels, except those of the engine, on the ballast, supports this opinion. It seems at least probable, therefore, that the speed of the train through the junction was not much less than 40 miles an hour, and if this was the case I have no hesitation in saying that the junction is entirely unsuited for anything like that speed.

From the foregoing arguments it will be seen that I am of opinion that the accident was caused by the tender-wheels being jerked off the rails through an error of judgment on the part of the driver in maintaining too high a rate of speed through the junction, which, owing to its construction, is suitable for only a very low rate; the effect of the speed being increased by the uneven distribution of weight on the tender-wheels which has been found to exist since, and probably existed to some extent before, the occurrence. There is no special rule bearing on the question of speed at this junction, but there is a general rule (No. 284A), which says that, "Engine drivers of "trains, when running through junctions to or from lines diverging from the straight "road, must so reduce their speed as to ensure a steady passage for the whole train "through the junction points and crossings." This is so vague that I do not hold the driver much to blame if his interpretation of it was rather wide.

Whether I am right or not in my arguments as to the speed and its effects, there can be no doubt that the driver made a mistake in not immediately applying his brake when he found the tender had left the rails. The reasons he gives for his not having done so are that he was afraid of the tender striking the platform, and of the rear vehicles telescoping those in front. But the tender left the rails on the inner side of the line, and ran some distance in the six-foot way before it crossed to the outer side,

and had the driver applied the brake immediately, there would have been no reason for assuming that the tender would strike the platform. And as to the second reason given, it would prove, if accepted, that the driver does not thoroughly understand the simultaneous action of the continuous-brake on all the wheels of a train. I am therefore inclined to think that whatever the actual reason may have been for the non-application by the driver of the continuous brake, the reasons given by him in his evidence did not exist in his mind at the time of the occurrence. The result of his omission was that the engine, which remained on the rails, dragged the train along the ballast for 300 yards, whereas had the brake been applied at once it is probable that the train would have stopped before it reached the platform.

Driver Devereux is an old servant of the Company, and had been on duty 4 hours and 37 minutes when the disaster took place.

Inspector Chapman and guard Pettit acted with commendable promptitude in endeavouring to apply the continuous-brake as soon as they found that something was wrong. They were both thrown down and Pettit was not able to regain his legs till the train stopped, but Chapman after three attempts succeeded in reaching his brake-lever, and applied the brake and the train then came to a stand.

The driver does not admit (though he does not deny) that Chapman applied the brake, but I see no reason for not accepting the statement of the latter as correct. The fact that inspector Chapman was ultimately able to get up and reach the brake, points to the fact that though all the wheels of his van were at one time off the rails, they subsequently regained to a great measure their proper position, four wheels out of six being found on the rails when the train stopped.

It appears from the evidence that this junction has been regarded by drivers as a "nasty" one for some time past. And I can well believe it, for a divergence from the straight of $4\frac{1}{4}$ ins. in a length of 12 ft. is very severe, being equivalent to a curve of little more than three chains radius, which even with a speed of only 20 miles an hour would theoretically require a super-elevation of the outer rail of about $6\frac{1}{2}$ ins., whereas, as already stated, there is and can be in this instance, no super-elevation at all.

I am informed that 12 feet is the standard length of switch rails in use on the lines of the Great Eastern Railway. Such switches are, in my opinion, too short for junctions of running lines, and I would recommend that the matter receive consideration by the Company, with a view to a more satisfactory length of switch being generally adopted.

In the meantime it is desirable that the speed through Haughley junction should be limited to a rate suitable to the conditions of the place, and the necessary instructions issued to this effect, as is already done in several other cases.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

(Signed) H. A. Yorke,
Major, R.E.

APPENDIX.

Particulars of Damage to Rolling-Stock.

Tender No. 736.—One brake-cylinder and middle rubbing piece on left side broken.

Third-class brake-van No. 128.—Two box-bottoms, 36 retaining ring bolts, two "D" boxes, one middle axle-guard, one bottom step and projecting glass broken.

Third-class carriage No. 806.—One "B" axle-box, two "B" tops and one "D" broken, and one brake-block and release-valve broken; one buffer bent.

Third class carriage No. 1010.—One bottom step-board broken; two buffers and coupling bent.

Third-class carriage No. 819.—Two "B" axle-box tops, two "D" axle-box bottoms, one brake-block, and one bottom step-board broken; two leg-iron, one coupling-bow and buffer bent.

First-class carriage No. 356.—One "B" axle-box top, two brake-blocks, 19 retaining ring-bolts, one leg-iron and two bottom step-boards broken; five leg-irons and one buffer bent.

First-class carriage No. 382.—Two "B" axle-box tops, one "B" axle-box bottom, three "D" axle-box tops, 14 retaining ring-bolts, one brake-block one scroll pipe-eye, one truss bar, two draw-bar plates, two bottom step-boards, release-valve and stop-cock, reservoir nipple, and one sole-bar broken; brake-reservoir shifted (blocks broken); two axle-guards, one draw-bar, seven leg-irons, middle-scroll and one middle-axle bent.

Third-class brake-van No. 152.—Two "B" axle-tops, one "D" axle-box top and bottom, one spring-band, one middle-guard, one end-guard, six leg-irons, two step-boards, one brake-hanger, one headstock, one diagonal, two longitudinals, one corner-pillar, one end-bar, and seven panels broken, one end-guard and one draw-bar bent.

Particulars of Damage to Permanent-Way.

Six 30-ft. 80-lb. bull-headed rails bent; 1 in 10 common crossing broken; one set 12-ft. switches; rails-bent, and chairs broken; 600 chairs broken; 112 sleepers broken; nine yards of the end of up platform nearest Bury St. Edmunds partly knocked down.

Printed copies of the above Report were sent to the Company on the 24th October.

GREAT EASTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
14th November 1892.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in your Minute of the 20th ultimo, the result of my enquiry into the circumstances connected with the collision (with buffer-stops) which occurred on the 16th ultimo at Forest Gate station, on the Colchester line of the Great Eastern Railway.

In this case the 12.18 a.m. down passenger train from Liverpool Street station came into slight collision with the buffer-stops at the end of the dock line at Forest Gate station.

Eight passengers complained of injury, but none of the cases are believed to be serious.

The train consisted of an eight-wheeled (four-wheels coupled) tank-engine running chimney in front, and nine vehicles, fitted throughout with the Westinghouse automatic brake, and in it the buffers of three carriages were bent.

The buffer-stops were slightly damaged. No vehicles left the rails.

Description.

At Forest Gate station there is a dock line at the back of the down platform, used both for the arrival and departure of trains running on the local lines between Liverpool Street and Forest Gate.

The home-signal for entering this dock is 190 yards from the up end of the platform, and 345 yards from the buffer-stops at the end of it. From the home-signal to the up end of the platform the line rises on a gradient of about 1 in 600; it is then practically level for about 90 yards; next falls on a gradient of 1 in 165 for 15 yards; and then rises on a gradient of about 1 in 500 for 50 yards to the buffer-stops. There are two red lights on the buffer-stops.

The distance from Maryland Point to Forest Gate is about three-quarters of a mile, and the line between these two stations is straight. The trains are allowed three minutes to run between the two stations.

Subsequent to a buffer-stop collision which occurred at Forest Gate station in July last, the following order was issued on July 27th :—

"The Forest Gate signalman must be careful not to lower his down home-signal for a train to pass from the down local line to the platform dock line until the train has been brought to a stand at the down home-signal."

Evidence.

1. *Charles Boley*, signalman; 12 years' service, six years signalman.—I came on duty at Forest Gate at 10 p.m. on the 15th October to take duty till 6 the next morning. I have been employed nearly three years at Forest Gate. Directly after the last collision, an order was issued that all down local trains running into the dock line should be brought to a stand at the down home-signal, and it is a fact that all trains now really stop at the down home-signal. I received "Train on line" for the 12.18 a.m. train on the 16th October from Maryland Point in due course, and I brought the train to a dead stand at the down home-signal, and after the train had stopped, I lowered the signal to allow it to pass into the dock, and when it passed the cabin, I had no idea whatever that it would run into the stops, the speed being the slowest, I think, at which I ever saw a train enter the dock, and I was not aware until from 20 minutes to half-an-hour afterwards that it had come into collision with the buffer-stops. I believe the train arrived about right time. I think as the engine passed my box that the fireman was looking out on the left-hand side. I cannot say whether any brakes were on when the train passed the box. I saw the guard at his brake as usual. The weather had been fine up to a short time before the train was due, and then it had come on a mizzling rain.

2. *Edward Holmes*, foreman porter; 13 years' service, 7½ years foreman porter at Forest Gate.—I came on duty at 3 p.m. on the 15th October to remain until 12.50 a.m. on the 16th. When the collision occurred I was on the down platform within about 50 yards of the buffer-stops in the dock. I was on the ramp at the London end of the platform when the engine of the train passed me, and I walked along the platform keeping pace with the train and stopped where I did in a position suitable for the work I had to do with the train. Porter Calcraft was with me near the starting-signal when the engine passed me, but he stopped at the end of the platform and I went on alone. I did not notice any brakes on when I was walking alongside the train. I had no idea that there would be a collision with the buffer-stops until it actually occurred. The speed seemed to gain a little just before the train got to the stops. I was in the signal-box when the train arrived and stopped at the home-signal. I have no idea how the driver came to make the mistake he did. I am not aware that the

rails were unusually greasy. I have no recollection of its raining just before the collision; the platform at the time was certainly dry. I did not speak to the driver, but as far as I could see him talking to the passengers he appeared to be perfectly himself. I did not ask the driver for any explanation as to how he came to strike the buffer-stops. The buffer-stops were very little damaged. There was no rebound of the train on its striking the buffer-stops. I was opposite the end of the second carriage from the engine when the collision occurred. So far as I am aware the rule as to absolutely stopping at the down home-signal has been rigidly observed since the order was issued. There were two red lights burning brightly on the buffer-stops and the platform gas was full on. There was no necessity for the engine to run close up to the buffer-stops in order to bring the whole of the train to the platform, which will hold 15 carriages and an engine at each end.

3. *Frank Calcraft*, porter; four years' service, all the time at Forest Gate.—I came on duty at 5 p.m. on the 15th October for 11 hours. Holmes and I were on the down platform, about half-way between the ramp and the buffer-stops, watching the train approach after it had stopped at the home-signal. I had moved two or three yards towards the train when the engine passed me at a slow walking speed, perhaps about three miles an hour. The driver was putting on the Westinghouse brake when the engine passed me. When I turned to go up the platform, Holmes turned towards the buffer-stops. From the speed at which the engine passed me, I had no expectation that the driver would strike the buffer-stops, and the collision with the stops took me quite unawares. I was standing opposite the seventh vehicle when the train stopped. There was no rebound. I did not speak to the driver, but went to the brake compartment in the rear of the train directly after the collision, and found the hand-brake hard on. On my remarking to the guard that I thought the driver had hit the stops, the guard said he did not think he had. There were two ticket collectors in the brake compartment with the guard. It had come on to rain shortly before the collision, not heavily, but a mizzling rain. There were two red lights on the buffer-stops, and the platform lamps were alight. I think there were 50 or 60 passengers in the train, and some of these were standing up and some were on the foot-board, ready to alight when the train stopped; but I did not see anybody actually jump on to the platform before the collision.

4. *Jeremiah Lynch*, driver; 28 years' service, 21 years a driver.—I have been accustomed to run to Forest Gate for the last 10 years, and to run frequently into the dock with down trains since it has been opened. I came on duty on the 15th October at 4.20 p.m., to sign off at 1.30 a.m. on the 16th, having had the same hours of work on the previous day. My fireman was Henry Hill, who has been with me two years. My engine was numbered 656, an eight-wheeled tank with four coupled wheels and radial axles front and rear. I have had this engine about 16 months. Both the engine and train were fitted with the Westinghouse brake. The rule for entering terminal stations is to do so at hand-brake speed, so that the train may be stopped by the hand-brake if necessary. I left Liverpool Street with the 12.18 a.m. train for Forest Gate. The train consisted of an engine running chimney first, and nine vehicles. I believe the vehicles were all four wheelers. We started one minute late, viz., at 12.19. I was standing on the right-hand side of the foot-plate, there being no one on the engine except me and the fireman. The first stop was at Maryland Point, and we had a clear run down to that station. We stopped properly at Maryland Point with the Westinghouse brake, the air pressure being about 65 lbs. There was no difficulty whatever in making the stop at Maryland Point. I left Maryland Point at 12.30 a.m., still a minute late, and on approaching Forest Gate I found the distant and home signals for the local line, on which I was travelling, both at danger. I had expected this, and I came to an absolute stop at the down home-signal with the Westinghouse brake, the brake pressure being at about 65 lbs. when starting after the signal was lowered. I do not think my speed exceeded five miles an hour when I passed the signal-box. I shut off steam just before I came to the signal-box (the steam pressure being about 120 lbs.), and I never applied it again after having once taken it off. When about half-way along the platform the fireman partially applied the hand-brake for the first time, at which time I do not think the speed exceeded three miles an hour. At this time I had no apprehension at all of striking the buffer-stops. When the train was about the length of an engine and three carriages from the buffer-stops, the speed not exceeding two miles an hour, I applied the Westinghouse brake very gently, the hand-brake still being partly on. The moment I applied the brake the wheels of the engine began to skid, and then the engine struck the stops, I not being able to do anything more. I had plenty of sand, but it was wet round the valves and would not run. A mizzling rain had begun to fall after I left Bow junction, but the greasiness of the rails produced by the rain had not prevented my stopping properly at the Forest Gate home-signal. I attribute not being able to stop properly on the present occasion to the rails being wet from the mizzling rain, to the slippery condition of the rails from the dropping of water from the engine, and to the line being, as I think, slightly inclined downwards towards the stops. The fireman did all I wished him to do with regard to stopping, and I did not whistle for the guard's brake, not anticipating being unable to stop. Two red lights were burning on the buffer-stops, and the platform lamps were alight. The only other buffer-stop collision I have been responsible for was one at Fenchurch Street about 20 years ago, and this was a very slight one.

5. *Henry Hill*, fireman; eight years' service, 2¾ years fireman.—I have been Lynch's fireman for nearly two years, and I was with him on the 16th October when the collision took place. My hours of working are the same as his. My place is on the left side of the engine when it is running chimney first. I agree with the driver's evidence that has been read over to me. When the engine was close to the end of the platform I applied the hand-brake slightly, and when we were about a quarter of the way down the platform I believe the driver applied the Westinghouse brake—the speed not then exceeding two miles an hour. I kept the hand-brake slightly applied after the driver put on the Westinghouse brake, and I then opened the sand-boxes which ought to have delivered sand in front of each of the driving-wheels, but I do not think the sand ran, as it was damp in the boxes. The engine-wheels continued skidding until we struck the buffer-stops, when I think the speed might have been rather higher than it was when the brake was first applied, as I think the line falls towards the buffer-stops. There was a certain mist or dampness in the air as we came down. I did not notice the driver release or reapply the brake after he had once put it on; he put it on and left it on. The brake pressure when we stopped was between 65 and 70. The engine did not rebound after striking the stops. Neither I nor the driver was hurt, and neither of us jumped off.

6. *Charles Hunter*, guard; 12 years' service, 5½ years guard.—I came on duty on the 15th October at 2.52 p.m. to finish at 12.37 a.m. on the 16th. The 12.18 a.m. train from Liverpool Street for Forest Gate consisted of an engine and nine vehicles, the last vehicle having a brake compartment, in which I rode. From that compartment I had command of the Westinghouse brake. We started a minute late,

viz., at 12.19, and the first stop was Maryland Point. We had a clear run down to Maryland Point, and started from that station for Forest Gate at 12.30, still a minute late. We stopped in the proper place at Maryland Point without overrunning the platform. The stop at that station was made entirely with the Westinghouse brake The next stop was at the Forest Gate down home-signal for the local line, which was at danger, in accordance with the new rule. I am quite sure that we stopped dead there. Directly after stopping the signal was lowered, and we went on to the station. I do not think the speed ever exceeded four or five miles an hour between the home-signal and the buffer-stops. Just before my brake compartment reached the signal-box I applied my hand-brake in the ordinary way, and not from any idea that the train was running in too fast. I had no idea that any collision would occur until the driver actually struck the buffer-stops, when the speed had been diminished and we had almost stopped. I felt the stop in the brake-van, and thought it was rather from the sudden application of the brake than from striking the buffer-stops. I did not observe when the driver put on the Westinghouse brake. I think the pressure was about 65 to 70 lbs. The collision occurred at 12.33. There seemed to be a slight mist at the time. I saw the driver after the collision, and he attributed the mishap to the fact that the wheels picked up. I partly fell in the brake compartment when the collision occurred. I think there were about 60 or 70 passengers in the train when it arrived at Forest Gate. The passengers who complained of injury were in the front portion of the train.

Conclusion.

This slight collision with buffer-stops is attributable to an error of judgment on the part of Lynch, the driver of the train, in regulating its speed when it was running alongside of the platform of the dock line at Forest Gate.

There is no reason to doubt that, in accordance with a recent order issued in consequence of a somewhat similar collision last July, the train had been absolutely stopped at the down home-signal, which is placed about 345 yards from the buffer-stops, and that the speed of the train when the engine reached the London end of the platform (about 190 yards from the signal or about 155 yards from the buffer-stops) did not exceed a walking pace, as the foreman porter on duty declares that he kept pace with the train from the end of the platform for a considerable distance.

The fireman states that he put on the hand-brake slightly at the end of the platform, the Westinghouse brake being applied by the driver (causing the engine-wheels to skid) when the engine was about 100 yards from the buffer-stops, the speed then not exceeding two miles an hour, but afterwards appearing slightly to increase, owing, he thought, to the line falling towards the stops.

Driver Lynch states that after starting from the home-signal he shut off steam just before reaching the signal-cabin (130 yards) from the home signal, on passing which the speed did not exceed five miles an hour, and that he never re-applied it; that the hand-brake was first applied when the engine was about half-way along the platform when the speed did not exceed three miles an hour; and that when the engine was about 40 yards from the buffer-stops he applied the Westinghouse brake very gently, the speed then not exceeding two miles an hour, that this caused the engine-wheels to skid and that he had then no time to adopt any other means to avert the collision, which occurred at a speed of about two miles an hour. There was sand on the engine, and the fireman had opened the sand-valves, but the sand being wet, owing to some imperfection in the sand-boxes, it would not run.

The guard declares that he had put on his hand-brake at the customary place, namely, when he was passing the signal-cabin, and that the collision took him completely unawares.

I cannot see any other way of explaining the cause of this collision than by assuming that driver Lynch, on finding the speed of his train too much reduced to reach the buffer-stops when he had arrived within a short distance from them, must have put on a little steam, and after this have been unable to stop in time. I hardly think the short falling gradient of 1 in 165 extending for about 15 yards to within about 50 yards of the buffer-stops—these 50 yards having an upward inclination of 1 in 500—can have had any appreciable effect in causing the increase of speed which is stated to have taken place shortly before the collision.

Supposing, however, a slight increase of speed to have momentarily taken place, this together with the check to the retardation of speed stated to have been caused by the picking up of the engine-wheels on the application of the Westinghouse brake would have been more than counterbalanced by the application of the brakes to the wheels of the nine vehicles.

Driver Lynch is an experienced driver of 21 years' service as such, and he has a good record. He had come on duty about eight hours before the collision for a spell of about nine hours, having been off duty the previous day for about 15 hours.

His fireman's hours were the same as his own.

The evidence as to speed in this case, as in so many others, was very absurd. The highest speed allowed to have been attained after starting from the home-signal was

five miles an hour, so that a speed of four miles an hour, including starting and stopping, would be a high average, and this would require about three minutes to reach the buffer-stops, or the whole time allowed for running the three-quarters of a mile between Maryland Point and Forest Gate, which time was not exceeded on the present occasion. I tried an experiment under as identical circumstances as possible, and found that it took from $1\frac{1}{3}$ to $1\frac{1}{2}$ minutes to run from the home-signal to the buffer-stops, and that the train could be stopped short of the buffer-stops by the application of the engine hand-brake only.

The condition of the sand apparatus on the engine of the train does not appear to have been satisfactory and should be looked to.

It is desirable that the surface of the rails of the dock line along the platform should be made of uniform level; and it would be advantageous to place a slight coating of fine gravel over the rails for a short distance from the buffer-stops, to give the engine-brakes a better bite.

I was unable to reconcile a discrepancy in the evidence of foreman porter Holmes and porter Calcraft as to their position when the engine passed them, but so far as I could judge the evidence of the former was the more trustworthy.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

C. S. Hutchinson,
Major-General, R.E.

Printed copies of the above Report were sent to the Company on the 3rd December.

GREAT NORTHERN AND LONDON AND NORTH-WESTERN RAILWAYS.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
July 30, 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 27th instant, the result of my enquiry into the circumstances attending the fatal accident which occurred on the 25th instant near Melton Mowbray station, on the Great Northern and London and North-Western joint line.

In this case as the 1.53 p.m. London and North-Western train from Nottingham to Northampton was approaching Melton north signal-cabin upon the up line at 2.46 p.m. the engine left the rails, followed by the whole of the eight vehicles in the train.

The engine ran off first towards the inside of the curve, into the 6-ft. way, but then turned across to the left, and, after tearing up the permanent-way for a distance of about 50 yards, ran over the edge of an embankment, about $21\frac{1}{2}$ feet in height, and came to rest on its right side, at the foot of the embankment, and nearly parallel to the main line, the remainder of the train being in the following positions, viz.: The tender on its right side upon the slope of the embankment, nearly at right angles with the engine, and with its trailing-end upwards; the leading vehicle, a second-class brake-carriage, with its body broken up, upside down on the slope, against the tender, and turned completely round; the next vehicle, a third-class carriage, on its side behind the engine, at the foot of the embankment, with its leading-end telescoped; the next vehicle, a first-class carriage, upon its wheels, halfway down the slope, nearly at right angles with the line; the next vehicle, a third-class carriage, and the next, a third-class brake-carriage, on their wheels, across both lines of rails, and the sixth, seventh, and eighth vehicles, being two composite carriages and a brake-van, on their wheels upon the up line, but with no rails under them.

The driver, Robert Herron, who jumped from his engine just before it went over the embankment, was killed, probably being struck by one of the carriages, and his body was found upon the 4-ft. way of the up line; the fireman, Henry Pollard, was also killed, his body being found under the end of the third-class carriage at the foot of the embankment, and a news-boy named William Stone, who was a passenger, supposed to have been in one of the two leading vehicles, was also found dead under the first-class carriage halfway down the slope. There were, fortunately, few passengers except in the rear part of the train, and three only are returned as having been injured. The damage to the rolling-stock was considerable, especially to the engine,

tender, and two leading vehicles, and about 50 yards of the permanent-way of the up line was completely swept away.

Particulars of the damages are given in an Appendix.

Description.

The scene of this accident was between 166 and 233 yards north of Melton north signal-cabin, and about 650 yards north of the station, and the line is at this point upon an embankment about 21½ feet in height.

From Scalford station, the nearest block-post northwards, the line falls upon a gradient of 1 in 133 for nearly 2¼ miles, and then for 1,217 yards to the site of the accident on a gradient of 1 in 333; and for the last 496 yards is upon a half-mile curve to the right.

The railway, which is the joint property of the Great Northern and London and North-Western Railway Companies, and is, on the section north of Melton north cabin, maintained by the former Company, was opened for goods traffic in June and for passenger traffic in September 1879. The permanent-way at that time consisted of 80-lb. bull-headed steel rails in 21-ft. lengths, fished at the joints by clip fish-plates weighing 40 lbs. per pair, and secured by outside keys in 40-lb. cast-iron chairs, each chair being fixed to a transverse sleeper, 9 ft. in length and 10 in. × 5 in. in section, by one wrought-iron spoke and two trenails. There were eight sleepers to each rail length, and the line was ballasted with gravel.

This original permanent-way still remains in use, except that a number of the sleepers have been from time to time replaced in the course of ordinary repairs.

The line is in very fair order, although the re-sleepering, which had been ordered, was about due. The gauge was correct, and there was a super-elevation of 4½ inches upon the 40-chain curve where the accident happened.

The total length of line which was prepared for slewing was about 340 yards, and 158 yards at the southern end of this length had been wholly or partially slewed. The engine left the rails 42 yards south of the north end of that piece of the line which had already been slewed, and 182 yards south of the point to which the line had been opened out.

The engine which left the rails, No. 1,165 (Vulture), was built at Crewe in 1878, and has a total mileage of 377,763 miles.

It came out of the shops after thorough repair on the 8th May, and has run 7,701¼ miles since that date.

It is a six-wheeled engine, with driving and trailing wheels coupled, and has a six-wheeled tender. The leading wheels are 3 ft. 6 in. and the coupled wheels are 5 ft. 6 in. in diameter. The weights and wheel-base are as follows:—

Weight, full:—

	Tons	cwts.	qrs.
On leading wheels	10	8	0
„ driving „	10	10	0
„ trailing „	10	10	0
Total in working order	31	8	0
Weight, empty	29	10	1

Wheel-base:—

	Ft.	in.
From leading to driving wheels	7	5
„ driving to trailing „	8	3
Total	15	8
Length over all	25	3½

The line is worked upon the absolute block system.

The following are extracts from the printed rules and regulations of the Company:—

"*Inspectors, Gangers, Platelayers, and others employed on the Permanent-Way and on Works affecting the Running Lines.*

* * * * *

Working of Fixed Signals when Platelayers are at Work within Station Limits or near intermediate Signal-Boxes.

"317. When it is necessary to change or turn a rail, or in any manner to obstruct the line, or to do any work to the permanent-way, between the distant-signals of any station, junction, or intermediate signalling-place, of a character to make the exhibition of a danger-signal at all necessary, the permission of the signalman must be first obtained by the foreman platelayer; and the work must not be commenced until the signals have been placed at 'danger,' in which position they must remain until the signalman is informed by the same platelayer that the line is again clear and safe for the passage of trains.

"*Platelayers to send out Flagman.*

"The platelayers must, in addition, protect their work by sending out a flagman, as ordered by Rules 321, 322, and 323.

* * * * *

"*Signals when repairing Line.*

"323. When repairing, lifting the line, or performing any operation so as to make it necessary for a train to proceed cautiously, the foreman or ganger must send a man back at least half a mile, or as much further as the circumstances of the case render necessary, who must fix a detonator on one rail of the line for which he is signalling and exhibit the 'Caution' signal in such a manner as will ensure it being plainly visible to the engine-driver of the approaching train.

"If the man in going back should arrive at a signal-box, he need not proceed beyond it, but he must advise the signalman in charge of it of the necessity for slackening the speed and giving the 'Caution' signal to the engine-driver of any train running in the direction of the repairs, and he must himself exhibit the 'Caution' signal as above instructed.

"In such cases the signalman must keep his danger-signals exhibited until the speed of the train has been sufficiently reduced, when he must, if the block telegraph or other regulations have been complied with, lower his signals to allow the train to pass, and caution the engine-driver.

"*Platelayers' Signals to reduce Speed.*

"325. A green flag or green light waved slowly from side to side indicates that trains and engines must reduce speed to 15 miles an hour over the portion of line protected by such green signal."

This last rule is numbered 305 in the driver's section of the rule book.

In addition to the above, which are Clearing House rules, the Great Northern Railway Company has issued additional rules for the guidance of their permanent-way staff, but these rules refer to "Renewal of Way," and not to ordinary repairs or slewing operations.

The driver of the train, Robert Herron, had been 35 years in the service of the London and North-Western Railway Company, and a driver for nearly 34 years. He had at the time of the accident been on duty for eight hours eight minutes, after a rest of ten hours.

The fireman, Henry Pollard, had been 18 years in the service, and a fireman for over 16½ years. He had at the time of the accident been on duty for five hours three minutes, and was not on duty upon the previous day.

Evidence.

Charles Marshall, guard, states: I have been 10 years in the service of the London and North-Western Railway Company and a guard for over three years. I worked for 12 months as brakesman, for about 18 months as tariff guard on the Northampton joint line, and for about two years as guard, so that I know the line very well. On the 25th instant I came on duty at 10 a.m. at Market Harboro' to work till 9.15 p.m., standing at Nottingham from 11.40 a.m. to 1.53 p.m. I had not been on duty the previous day. I was the guard of the 1.53 p.m. train from Nottingham. On leaving Nottingham the train consisted of:—Engine No. 1165, second-class carriage brake No. 90, third-class carriage No. 661, first-class carriage No. 196, third-class carriage No. 398, third-class carriage brake No. 1814. On arrival at Stathern I attached two composite carriages and brake van in the following order:—Composite No. 137, Scarboro' to Northampton, composite No. 190, Scarboro' to Leamington, brake van No. 240 in the rear. From

Stathern I rode in the rear brake van. The train left Stathern at 2.32 p.m. On approaching Melton, I saw the north box distant-signal off, but I did not see any other signal. After passing the distant-signal I felt the driver test his brake, and afterwards apply it, and the speed was reduced to from 15 to 20 miles per hour. After proceeding a short distance I felt a shock. I was moved from my seat by the shock, and clung to the brake-wheel. I felt the van jump six or seven times after the first shock. It was off the road. I felt the brake act when the driver applied it, shortly after passing the distant-signal, and the speed of the train was reduced thereby. I got out on the 6-foot side directly we came to a stand, and saw several platelayers standing close to the van. I asked them what was the matter, and they replied they did not know the cause of it. I did not hear anything else from the platelayers. I knew at once that a serious accident had taken place. I saw the engine and a portion of my train down the bank. I had no doubt that the whole of my train was off the road. There were no rails underneath my van. I went up towards the front of the train, and asked Buxton, the leading platelayer, to go back and protect my train. He sent a man directly. I also asked for a man to be sent to the station for assistance. Inspector Rockley, permanent-way inspector, was travelling with me, and he went on to Melton for assistance. There were 15 or 16 passengers in the train when we left Stathern; they were riding principally in the Scarboro' carriages at the rear of the train, and there were very few passengers in the front portion of the train. I went towards the front part of the train and I saw the driver lying dead in the 4-ft. way of the up line, *i.e.* the road upon which we had been running. I then returned to the rear portion of the train, to assist the passengers out of the Scarboro' coaches. After helping the passengers out of the Scarboro' and rear carriages, which remained on the road, I went to those lying on the embankment, to satisfy myself whether there were any passengers in them. I found no passengers in those carriages, but I found the body of a boy underneath the carriage axle-box, which was partially down the embankment. On going further down the bank, I afterwards found the body of the fireman lying under a portion of one of the carriages at the bottom of the bank. I did not hear any fog-signals explode between Stathern and Melton, neither did I see any fixed flag-signals, or any signals whatever given by the platelayers. Steam was shut off at the usual place about as far outside the distant-signal as the station is inside it. The speed of the train at the time when the engine left the rails was less than it is usually at that point, with a train having to stop at the station. The continuous-brake is usually tested as it was upon this day at the distant-signal. When on the curve between the distant-signal and the signal-box the brake was put on full power to reduce the speed. As a rule this would not be done to stop the train at the station until passing the north signal-cabin. When the driver tested his brake the gauge was showing a vacuum of 19½ inches. When the brake was applied fully between the distant-signal and the signal-cabin the train pipe-gauge showed zero. I think that the brake came off a little before the train left the rails, but I did not look at the brake-gauge again. The speed of the train at the distant-signal was about 35 miles an hour I believe, and I think it was reduced to between 15 and 20 miles an hour before the train left the rails. I know that there was a notice out that speed was to be reduced to 15 miles an hour at that place during the week. The continuous automatic vacuum-brake was working upon all the vehicles in the train, the engine and tender being fitted with the steam-brake. Driver Herron was in the habit of working upon this line.

William Higgins, signalman, states: I joined the service of the Great Northern Railway Company in July 1879, and was appointed a signalman on the Great Northern Railway in 1881. I was transferred to Long Clawson, on the joint line in 1882. I have been at Melton north box since October 1883. The box is open day and night; it is a 12 hours' post, and there are two signalmen. I came on duty on the 25th instant, at 6 a.m. Everything worked in the ordinary way until the occurrence of the accident. I received, from Scalford the "Be ready" for the 1.53 p.m. train from Nottingham at 2.40, and I accepted it, the line being clear ahead. I received "On line" at 2.43. I passed the "Be ready" to the box in advance, and had it accepted from that box, and on the slot being taken off from the south box, I lowered my signals for the train to come on. I saw the train approach in the usual way round the curve. I watched the train pass the distant-signal, and then placed that signal at "danger" behind it. I noticed that the steam was shut off, and that the train was approaching at the same speed as is usual for trains slackening for stopping at the station, I saw the train leave the road. I knew that the platelayers were working at that place as they had been there during the greater part of the day, but no one had told me what they were doing, nor had I had any instructions to slacken trains. I had no information that they were about to do anything which would interfere with the ordinary working of the railway. I am not in a position to say whether there were any flagmen out to protect the work. I did not see any. As soon as I saw the accident, I blocked both lines by sending the obstruction signal in both directions, and at once sent information to the Melton station-master, and also to Scalford. I am quite certain that the train was not coming round the corner any slower than usual with a train stopping at the station. With a stopping train the brakes are usually applied as the train is passing my box. I cannot say when the brake was applied upon this train, or whether or not it was on when the train left the rails. I estimate that the speed of the train when it left the rails was 30 or 35 miles an hour, which is the usual speed for that train at that point. There was no communication between the ganger and myself on that day as to the nature of the work which was to be done. Printed notices as to signal alterations, slackening of speed, and work to be done on the line are usually sent to the signal-boxes. I cannot be certain whether or not we had the notice for the previous week, but I am sure we had not got it for this week. The last train which passed on the up line before the accident was a London and North-Western coal train. This train was given "On line" to me at 1.51, and it passed at 1.58. It was cleared from the station-box at 2.6. The accident happened at 2.46 p.m. Scalford, the next block signal-box north from Melton is three miles from my box. The time for trains to take in running from Scalford is five or six minutes for trains which stop there, and three or four minutes for those which do not stop. This train did not stop at Scalford.

Charles Rockley, permanent-way inspector, states: I am inspector of permanent-way. My district extends between Melton, Saxondale, and Bottesford, and the piece of line on which the accident occurred is under my charge. I have been five years inspector, and prior to that was foreman of the extra gang for about eight years. I have had charge of my present district for about 2½ years. I have been in the railway service altogether for about 22 years. I walked over the length from Melton to Scalford last on Friday the 22nd instant, and I then gave instructions to Harwood, the foreman of the extra gang. He was to go and set up a few spikes on the Saturday, and to open out the up line from 20½ to 21 miles (miled from Hallaton junction), prior to re-sleepering. I also told him at the same time, that, when we did the re-sleepering, I intended to slew the up road so as to reduce the space between the up and down lines, and bring it to six feet. It varied from six feet two inches to seven feet. A notice had been given, but the material was not on the ground. I told Harwood distinctly that I intended to slew the road when the re-sleepering was done. I had no orders

from the district engineer as to the slewing of the line, and I did not mention that I was going to do it. On the Monday morning I came to Melton by the first train, reaching there about 9 o'clock, and I saw the men at work opening out, and what they were then doing was quite in order. It was not interfering with the working of the line, and it was not necessary in my opinion for the speed of the trains to be reduced. They were only opening out the ballast as far as the surface of the sleepers, which remained well boxed up at the ends. I left Melton by the 9.40 train, and there was no slewing being done then. I returned by the 1.53 train from Nottingham, and joined the train at Bingham Road. I got into the rear van at Stathern, and rode with guard Marshall. I did not notice the distant-signal, and I did not notice whether the speed of the train was reduced. When some distance inside the distant-signal, I felt a shock. Directly after I felt the shock I looked out on the 6-ft. side where I was sitting, and saw the train was off the road, and that one of the carriages was foul of the down line. The train came to a stand very suddenly, and I got out at once, and helped to assist the passengers out of the carriages. I thought at first that we were nearer the Melton station than was the case, and that we had struck an angle-crossing. After I had assisted the passengers out, I came to the rear of the train, where the platelayers were standing, and asked the foreman, Buxton, what was the matter. Buxton said, "It's Harwood." I said, "What has he been doing?" and he said, "Slewing the road, and no flagmen out." Buxton was the foreman of the regular gang, and Harwood the foreman of my extra gang, both gangs being employed at the work. Harwood was the man who was actually in charge of the work, and he had received instructions from me on Friday. I then spoke to Harwood, who was standing amongst the other men at the rear of the brake, and asked him what he had been doing. He said, "Slewing the road." I said, "You have not had a flagman out." He said "No." He admitted that he had not had a flagman out, as he did not think it was necessary. I looked round the road, and saw it was all broken up. I found the road had been slewed about three inches, near the point where the engine left the rails. From what I saw I consider a flagman should have been out. Both Buxton and Harwood have been supplied with rule books. The men had really been at work some distance north of the point where the engine first left the rails. As near as I can say we were running about 20 miles an hour when the accident happened. I cannot say how long Harwood has been in the service. He was foreman of the extra gang when I was appointed to this district 2½ years ago, and I have known him for many years as a platelayer. I have not previously had occasion to blame him for any breach of rules. As regards Buxton I found him, when I took charge of the district, acting as foreman of the regular gang, and the piece of line in question was and is under his charge. I have had no occasion to find fault with Buxton. I gauged the line at this point last about a month ago, and it was true to gauge. I gauged it again after the accident, and it was right, up to the point where the line was broken up. There is a cant of 4½ inches on the curve, and this cant was regular and even. The sleepers were in fairly good condition, but most of them were the sleepers put on when the line was made. There was no sign of any vehicle having left the rails north of the point, where the line was broken up. I have seen one of the notices issued which says that speed at that point was, during the week, to be reduced to 15 miles an hour. I inspected a part of the road which had been slewed north of the point where the train left the rails, and this part seemed to me to be fit for a train to run over at a speed of 15 miles an hour, but not at a higher speed. If a flagman had been out with a green flag it would have been the duty of the driver to reduce speed to 15 miles an hour. If he had been out with a red flag it would have been the duty of the driver to stop his train clear of the place where the men were at work. When re-sleepering, that is when the road is broken, a red flag should be sent out. If slewing is being done to any extent a red flag should be out. I think a green flag would have been sufficient for what was being done upon this occasion, judging from what I saw afterwards. I think also that, as the work was being done inside the distant-signal, notice should have been given to the signalman as laid down in Rule 317. I intended to commence the re-sleepering on Wednesday, two days after the accident. I never intended to commence it on Wednesday 22nd instant, but if we had got the materials sooner we would have commenced. After the accident only about 20 yards of the road, which had been slewed, remained unbroken up. I did not measure it, but I think that this part had not been slewed for more than three inches. Probably further south it had been slewed more than this. The ballast at the six foot end of the sleepers, on the part being slewed, had been taken out.

Christopher Gale, platelayer, states: I am a platelayer working in the extra gang under ganger Harwood. I have been a platelayer nearly seven years. My hours of work are from 6 a.m. to 5.30 p.m. I was at work on the up line when the accident happened. We started slewing at about 1.15 p.m. There were six of us in the gang besides Harwood and Buxton. Buxton was some distance away, making holes to prize the rails over. We had been at work some time slewing, when Buxton came to us and spoke to Harwood. I then heard Buxton speak to Harwood about flagmen, but no flagman was sent. We had slewed the road in places as much as a foot. We had not forgotten the train to which the accident happened. We were working to get ready for it. We were working until the last moment, and stepped into the other 4-ft. way, out of the way. I saw the driver jump off his engine on the 6-foot side. I did not see what became of him afterwards. I did not see the fireman. The train appeared to be running at about the ordinary speed. I cannot estimate exactly what this speed was, but it was about the ordinary speed of trains at that point, where I have occasionally been working when trains passed. I cannot speak as to the brakes on the train. When the engine passed I was at the north end of the part which was being slewed. The engine was several yards past me when it left the rails. I did not notice it lurching much before it left the rails. It ran off first over the rail on the low side, and then turned across to the outside of the curve. I think there should have been a green flag out. That would have slackened the speed of the train a good deal. The train was running considerably faster than trains usually do when a green flag is out. We dug out the ballast at the 6-foot end of the sleepers before we began to slew. We had commenced slewing before the coal train passed, but had not done much. It was after this train passed that Buxton spoke to Harwood about flagmen. I did not hear Harwood make any reply to Buxton. I do not know whether any notice was given to the signalman. The extra gang has been working for some weeks lately in Buxton's length, on both lines. I did not hold up my arms when I saw the train approaching, nor did I see anyone else do so. I was not alarmed at the speed at which the train was approaching.

Thomas Woodford, platelayer, states: I am a platelayer working in the extra gang under foreman Harwood. I have been a platelayer for about eight months, and have been working under Harwood all the time. Prior to the accident we had been slewing the up road. I heard Buxton say to Harwood, "There ought to be a flagman." I did not hear Harwood make any reply, but no flagman was sent. This was about a quarter of an hour or 20 minutes before the accident, as near as I can tell. I saw the engine come towards the 6-foot side, and then it slewed

round, and went down the bank. I was working next to Gale. I cannot estimate the speed of the train, but I think it was running faster than trains usually do with a green flag out.

William T. Coy, platelayer, states: I am a platelayer working in Harwood's gang, and have been a platelayer five years. At the time of the accident we were slewing the road. Harwood gave instructions to us personally. After dinner Harwood told us to get our bars, and I knew that meant slewing the road. We commenced from the south end, and the work was done under Harwood's direction. Buxton came up about 10 minutes or a quarter of an hour before the train came, and commenced to work with the bar, like the rest of us. We knew the train was coming, and we were trying to get the line ready for it. I saw the road before the train came; it did not look like a road for a train to go over. This was when we stood back to let the train pass. There was no flag outside, or with the working party. I do not think the train was more than nine or ten rail lengths off when I first saw it. We were working right up to that time, and we then stood back to let the train pass, and it was then that I noticed the state of the road. We had banner-flags with us, but they were not in use. The engine left the rails after it had passed me. I did not see it lurching before it jumped off the rails. I cannot estimate the speed. I think that the road was in such a state that there should have been a red flag out. I cannot say whether the train was running faster than trains usually do, or with a green flag out. I did not notice the brakes. I did not hear anything pass between Buxton and Harwood. Harwood was superintending. I did not see anyone holding up their arms to warn the driver. I did not feel alarmed.

Richard Miles, platelayer, states: I am a platelayer working in Buxton's gang. I have been a platelayer 11 years, all the time, and on the same length, ever since the opening of the line. Buxton has, I think, been in charge of the same length for about eight years. At the time of the accident I was working with a gang of six men. We were employed in the morning in opening out, and after dinner we started to slew the road. We were told by Harwood to get our bars and slew the road over, and we did this. At the time we commenced slewing Buxton was not with us. He was working northwards, in advance of us, making prize-holes, but he returned about a quarter of an hour or 20 minutes before the accident, and took a bar himself, and assisted in slewing the road. I did not hear any talk about sending flags out. I know that there were no flags out. In my opinion the state of the road was such that there ought to have been a green flag out. I noticed the road just before the train came, and it was not fit for a train to pass over. We were working up to the last moment, and did not cease work until the train was within seven or eight rail lengths of us. I heard Buxton say, "We must make haste," as the train was due, and we were working as hard as we could to get the road right for the train. In my opinion the road was out of line. I think the road was not safe for a train to run over at the speed at which this train was going. I cannot say for what speed it was safe exactly. I think that this train was running at 20 miles an hour at least. I did not know who Buxton made the remark to about the train being due. I heard no reply.

Alfred Skerritt, platelayer, states: I am a platelayer, working under Buxton, and have been in the service about seven years, working all the time on the same length. When this accident happened, I was working with a gang of six men with Buxton and Harwood; we were slewing the road. We had orders from Harwood to get out the bars, and begin slewing joints and middles; this was about 1.20. Buxton was working ahead of us, making prize-holes. About 20 minutes before the accident, Buxton came back to us, took a bar himself, and began helping us to slew. About 10 minutes before the train came, I heard Buxton ask Harwood whether it would not be wise to send out a flagman to steady the train over. I heard no reply. No flagman was sent. Directly afterwards Buxton pulled out his watch, and said to Harwood, "We shall have to make haste, as the train is very nearly due." At that time he (Buxton) looked towards Scalford and saw the train coming round the Scalford curve. He then said, "She is coming." We started bustling about to get the road something like in order. The next thing was Harwood shouted we were to stand out of the way. The train was perhaps 200 yards off when we were called upon to stand back. As the train approached, it was running at the usual speed of trains past this point. I did not notice the state of the road. There was no signal of any kind that I saw given to the driver. I have often been working at that point when trains have passed. I think the train was running at 35 miles an hour. I think that there should have been a red flag out at the distant, and a green flag at the work to steady the train over. In my opinion the road was in such a state that a train might have run over it at a speed of 15 miles an hour. I did not hear any reply from Harwood when Buxton spoke about the flags. Harwood was on the station side of the gang, and all the gang were working on one rail length. When Harwood called out to stand clear he was five or six rail lengths away. The engine had passed Harwood before it left the rails.

Charles Munks, platelayer, states: I have been working as a platelayer in foreman Buxton's gang seven or eight years, all the time on the same length. At the time this accident happened we were engaged with a gang of six, with Buxton and Harwood, slewing the road. We were working under Harwood's instructions. Harwood told us to take our bars, and go through it. We were working up to the time the train was very near to us, and then stepped out of the way. The train came off the road directly south of us. Buxton had been working making prize-holes, and then came back and commenced to help us. I did not hear any conversation between him and Harwood. I had not time to look at the road. Buxton said "We will pull the place in before the train comes."

Henry Buxton, foreman platelayer, states: I am foreman platelayer in charge of the length from 20¼ to 22¼ miles (miled from Hallaton junction). I have been in the service about 10 years and foreman about seven years on this length. The length commences at the last crossing at Melton north box. Inspector Rockley walked over my length on Friday last, but he gave me no instructions. On Saturday I saw Harwood, and he told me that Inspector Rockley said my men were to help his men with this work on Monday. He asked me whether Inspector Rockley had said anything to me and I said, "No." On Monday morning I sent my men to open out the road and set spikes. Harwood told me on Saturday that what we had to do was to slew the road right for re-sleepering. About two months ago we slewed the down road a little further away from the brickyard, and I understood from Rockley that when we re-sleepered the up line, we were to slew this in the same way. On the Monday morning I went over my length, leaving my three men to open out. We kept on opening out until Harwood brought two rails, his banner, flags, fogs, and some other materials on the trolly, but there were no sleepers on the ground, so we could not proceed with the re-sleepering. We expected the sleepers on the Tuesday, and we intended to commence the re-sleepering the next morning. Before dinner we prepared a length for slewing after dinner. After dinner, a little after 1 o'clock, Harwood asked me to make some prizing holes, and we commenced slewing about a quarter-past 1. I

went on making the prize-holes until about 2.15, when I came back to the gang and took a bar. As I came back I saw two or three nastyish places in the road. I asked Harwood whether he was going to have a flagman out, and he never answered me. I then took hold of a bar and helped to pull. We went over that portion which Harwood had been doing. While we were over it I pulled my watch out at half-past 2, and said, "We shall have the passenger here directly, George." He said, "I shall be ready for it when he comes," and when the train was coming out of the end of the cutting he said "Stand out," and we all stood out. After we stood back I did not look at the road. The train was close upon us. We all came out on the 6-ft. side. I watched the train go by, and all of a minute it seemed to give a jump, there was a crash, and the engine was down the bank. As a matter of fact no flagmen were out. Harwood never answered me when I suggested a flagman should be sent out. Harwood was watching the men slewing at the time. We were a little behind the tail of the train when it came to a stand. The line was in good order before Harwood commenced slewing. A coal train had passed over the line at 1.58. This was the 10.5 from Doncaster. The line was slewed a good piece, about a foot, but this had been done at several pulls. I did not notice the state of the line, as we were working until the train was on us. The train passed us at about the usual speed for a passenger train having to stop at Melton Mowbray. So far as I know, no communication was made to the signalman at Melton north in connection with our work. I am aware of Rule 317, and if I had been in charge of the work myself I should have informed the signalman. I have to go over my length morning and evening, and when extra work such as this is done the foreman of the extra gang takes charge of it, because he is continually on the spot. I could not see whether it was the leading or trailing wheels of the engine which first left the rails. I did not see the driver jump. I did not see anything of the fireman. I had gauged the line the week before, and the gauge was correct. The cant of 4¼ inches, which I tried the same week, was also correct. There had been 150 new sleepers put in between the signal-box and the distant-signal about three years ago, and others at odd times since. There were several which wanted replacing. I think that whenever there is slewing "any quantity" there should be a flagman out. The driver should have been cautioned with a green flag to reduce speed to 15 miles an hour. This train was running at a good 30 miles an hour. When I spoke to Harwood about having flagmen out I had just got back to the gang. Harwood was 15 or 20 yards off on the station side of the gang. I do not know whether he heard me. I thought he did hear, or I would have asked him again. I spoke out loudly. When the coal train passed I was making the prize-holes, and the gang had commenced to slew. The coal train was not running half as fast as the other train. About one foot was the utmost the line was slewed. About two or three months ago, when we slewed the down line, Rockley told me that when we re-sleepered the up road he would have it pulled over. I thought by this that he meant to pull it over after getting the sleepers in. I do not know what Rockley told Harwood, and I do not know whether the signalman was told. If I had been doing the work I would have told the signalman. I think the coal train was running over 10 miles an hour. I did not receive any notice as to the reduction of speed, either this week or the week before. Some of the spikes on this bit of line had been eased on Saturday. None had been drawn.

George Harwood, foreman platelayer, states: All that I have to say about the accident is that I do not know how it happened. I am a foreman platelayer, and have been in the service for 12 years, six of which I have been foreman of the extra gang. After dinner, on the day of the accident, we went to work at 1 o'clock, and we were working continuously until the accident. We were barring and pulling the line over a bit, and then straightening it. I and my gang were there to open out and prepare for re-sleepering. On the 22nd instant I had orders from inspector Rockley to set up spikes, and open out from 20 to 20¼ inches for re-sleepering, and he said, "We will slew " and put it in its place, as well as we can, before we " put the new work in." I started after dinner on Monday with this slewing, and continued at it until the accident took place. There were no flagmen out in connexion with the work. The reason why I did not send a flagman out was that I did not think it necessary to send one out for the little bit, as I knew the train times, and intended to be ready for it. I cannot say what caused the train to leave the line. The line was good all the way up to me. I think that, when the train came to a stand, the rear brake-van would be about three rail lengths, that is 21 yards south of where I was standing. I am not aware that Buxton said anything to me about a flagman being out. I did not hear him. I did not give any notice to the signalman of the work we were doing. I know Rule 317, but I did not think it necessary to acquaint the signalman of what we were doing. At the time the accident happened I was between the gang and the signal-box, about two rail lengths away, looking north. I saw the train approaching. It was running between 20 and 30 miles an hour. I gave no signal to the driver as I did not think one was required. I did not myself receive one of the notices as to reduction of speed during the week at this point, but I saw one on the signal-box at Stathern. I cannot remember whether this was on the Monday, or on the previous week. I read it to see if the re-sleepering was going to be started. The reason that I did not check the train was that there was no necessity for me to do so, on account of the state that the line was in. The ballast at the 6-foot end of the sleepers had been taken out for about 250 yards I should say, and the road had been pulled over for about half this distance. It had been pulled over for about a foot at the most, and that was where the engine left the rails. I think that was about 50 yards after the engine passed me. I did not see the engine lurching before it ran off towards the 6-foot side. I did not think that there was anything in the state of the road to cause the engine to leave the rails. If I had thought there was any danger I would have sent a man out with flags, and have warned the signalman. I still think that it was not the state of the road which caused the accident, but I cannot suggest any reason for it. I was standing in the best position for seeing the state of the road. I did not notice the state of the brakes on the train as it passed. I never dreamt of there being any accident, and I was not thinking anything about the reduction of speed. I considered the road was right for any speed. I have never heard of any complaint as to the state of the road where I have been working.

Conclusion.

From the foregoing evidence it appears that the facts of this case are, briefly, as follows:—

It was arranged that the section of the up line north of Melton Mowbray should be re-sleepered, the work to be commenced in the week ending July 23rd, and accordingly

among the usual weekly printed "Slackening" notices was one limiting the speed at the place where the accident happened to 15 miles an hour. As the new sleepers were not delivered in the above week, a similar notice was issued for the week ending July 30th, and this notice, as appears from a statement printed as an Appendix, was duly received by driver R. Herron. Upon Friday the 22nd instant Charles Rockley, the permanent-way inspector for the district, ordered George Harwood, the foreman of the extra gang, to prepare for the re-sleepering, by opening up the up line from 20¼ to 21 miles, telling him at the same time that, when doing the work of re-sleepering the line was to be slewed, so as to bring the up line, which for some unexplained reason was originally laid at this point over seven feet from the down line, into the usual position, with a six-foot space only between the two lines. Foreman Harwood's account of the matter is that he was told to slew the line before commencing the re-sleepering, while inspector Rockley is positive that he stated clearly that the line was to be slewed when the re-sleepering was done. Probably the inspector is right and he was misunderstood by the foreman, but, however this may be, upon Monday 25th instant the regular gang with foreman Buxton, and the extra gang with foreman Harwood, who was in charge of the whole squad of seven men, commenced work upon this length, first opening up the ballast, and easing the spikes, and then, after dinner at about 1.20, commencing to slew the line, beginning from the south end of the length, and working northwards. Foreman Buxton was at first working north of the gang making prizing holes for use when pulling the line over, but at about 2.15 he came back to the gang and commenced working with them, Harwood directing the operations from a point 15 or 20 yards south of the gang. Foreman Buxton states that he asked Harwood whether he was going to send out a flagman, and the evidence leaves no doubt that he did so, but Harwood says that he did not hear him, and as a matter of fact no flagman was sent out.

The position of affairs, therefore, when the 1.53 train was approaching at about 2.45 p.m., was as follows: About 158 yards of the up line had been slewed or nearly slewed into the new position; slewing was actually going on upon a length of about 20 yards, and for a considerable distance northwards the line had been prepared for slewing by the excavation of the ballast at the 6-ft. end of the sleepers; there were no flagmen out; the signalman, having had no notice of what was going to be done, had lowered both his home and distant signals for the train; and the driver of the train which was approaching was in possession of a notice that speed was to be reduced to 15 miles an hour.

There seems to have been no mark of the engine having left the rails north of the point where the line was broken up by the accident; and, as one of the witnesses describes it, the engine jumped off towards the right or 6-ft. side, about 42 yards south of the most northerly point to which the slewing had actually been carried out.

It is quite clear from the evidence, first, that the line was, at the time, rendered quite unfit for a train to run over at any speed; and secondly, that the speed at which the train was running, when it left the rails, was considerably over 15 miles an hour, although how much over it is impossible to determine.

I consider, therefore, that the responsibility for this sad accident must rest principally upon foreman George Harwood, who, even if the slewing of the line by his orders, without proper authority, may be attributed to a misunderstanding, ought certainly to have sent out flagmen in accordance with Rule 323, and to have warned the signalman in accordance with Rule 317. In neglecting to do so, although it must be said that the rules quoted do not specify "slewing" as one of the operations to be invariably covered by flagmen, he was guilty of a grave error of judgment in his failing to see that the line was in such a state, that the operation he was performing was one which made "it necessary for the train to proceed cautiously," and therefore one during which, under the rules, a flagman should have been out.

I regret to say, however, that it is impossible to acquit the unfortunate driver of non-attention to the notice which limited the speed at this point to 15 miles an hour, and, as it is quite impossible for anyone to say positively that, if the speed had been no higher than 15 miles an hour, the train might not have run safely over the portion of the line which had been slewed, he must be held to have contributed to the accident. It may be fairly urged in his defence that he had been running through the previous week under the same notice, and had found no work in progress, and that he was not further warned, as he should have been, by finding flagmen out; but still it was his plain duty to obey implicitly the order he had received.

I do not find anything either in the general conditions of the line, or in the state of the engine, to comment upon; but I must remark that there seems to have been some

carelessness shown as to the distribution of the "slackening" notices, for I understand that the signalman in Melton north cabin ought to have received one.

The fact that this man did not receive the notice, did not, however, in any way contribute to the accident, and is more a matter of discipline for the Company to deal with.

I would further point out for the consideration of the Company, that it appears most desirable that some additions should be made to the rules for the guidance of "inspectors, gangers, &c." I consider that such an operation as slewing should certainly be always protected by flagmen, and, although of course some discretion must be left to the gangers or foremen, I think that it is desirable to limit their responsibility as much as possible within due limits, and I would therefore recommend that in Rule 323 the words "or slewing" should be added after the words "lifting" in the first line, so that when slewing, as well as when repairing or lifting the line, it shall not be left to the discretion of a foreman to decide whether or not flagmen should be out.

I also consider that it might be well to add a rule to the effect that in all cases when the work is of such a character that "slackening" notices are considered necessary, it shall be imperative upon the foreman or ganger to send out flagmen, and I am strongly of opinion that slewing operations should not, as in this case, be undertaken without the knowledge of the district engineer of the line.

At the time at which the accident occurred, foreman George Harwood had been on duty for $8\frac{3}{4}$ hours; his hours of work being in summer $11\frac{1}{2}$ hours, less $1\frac{1}{2}$ hours for meals, and in winter 10 hours, less one hour for meals.

I have, &c.,
F. A. Marindin,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

London and North-Western Railway.

Market Harboro',
July 28, 1892.

Dear Sir,

I beg to inform you that on Friday last, 22nd instant, as is my usual practice, I opened the letter containing the weekly slackening notices, which was addressed to my father; there were three different notices and four sets of them, one issued by Sir George Findley, one by Mr. Purssell, and the other by Mr. Groom. I folded the three together in four separate parts, and wrote the names of the drivers on the back of them, viz., R. Herron, John Hartwell, T. Batty, and H. Pollard, and laid them on the desk in the pumping-engine house, where the drivers make out their tickets. On Saturday morning, 23rd instant, I came on duty at 6.0 a.m. in company with my father, R. Herron, driver, for I was going out as fireman with him. I took the slackening and relaying notices out of the pumping-engine house and put them on to the engine. When we had got on to our train and standing in the bay before starting, my father opened the notices and asked if there was any ballasting on joint line on Sunday. He looked at them for some time, and then put them into his basket.

Yours truly,
H. Herron,
Fireman.

A. L. Mumford, Esq.

Extract from Slackening Notice.

London and North-Western Railway.

Circular to Enginemen, Guards, and Others.

Permanent-way and other works necessitating the blockage of lines or running of trains at slackened speed.

Week ending Friday, 29th July 1892.

* * * *

Between Melton North and Scalford.—Up line—re-sleepering—21 and $20\frac{1}{4}$ mile ports.—Until further notice—Trains to reduce speed to 15 miles per hour.

Particulars of Damage to Engine, Rolling Stock, and Permanent Way.

London and North-Western engine, 1165.—Footplate, on right-hand side damaged full length; cab irreparable; right-hand trailing-splasher and panel irreparable; left-hand trailing-splasher badly damaged; leading sand-box and driving-splasher on right-hand side damaged; hopper and cylinder-cock gear damaged; boiler covering-plates, dome and safety-valve shells damaged; foot-step and corner-plate broken right-hand side; both driving-springs and centre-links broken; brass feed-bags between engine and tender damaged; right-hand coupling-rod bent; chimney irreparable; one feed-pipe broken; injector steam-pipes damaged; whistle-stand broken, irreparable; air disc and steam-box for drivers valve broken; two whistles broken; two steam wheel spindles irreparable; one stop-valve spindle and wheel irreparable; lubricator for regulator broken; one lubricator at front of fire-box irreparable; ejector ram broken; steam-brake gearing damaged; vacuum-pipes damaged, five of these irreparable; two vacuum hose pipes irreparable; thimble for L. D. horn-block broken; safety-valve lever bent; eye-bolts for side-chains broken; two enginemen's tool boxes damaged; steam and vacuum-gauge damaged.

Tender 1268.—Tank, will have to be cut to pieces and rebuilt; frame irreparable; two axle-boxes irreparable; vacuum T pipe irreparable; two foot-steps

irreparable; two feed-pipes irreparable; dip-pipe scoop irreparable; panel plates irreparable; two life-guards bent; one foot-plate bent; four (tyre) brake-rods bent; one long stay bent; three cross-stays bent; brake wheel broken; four tank-handles bent.

Carriages.—90, second brake.—Body and underframe broken up beyond repair.

398, third-class.—Body completely broken up, and underframe damaged.

196, first-class.—One side and end damaged, doors and continuous step-boards broken.

661, third-class.—One end compartment completely broken and underframe badly damaged.

1814, third brake.—One end smashed in; underframe badly damaged; headstock and step-boards broken.

137, composite.—Corner pillars and end panels damaged; buffer rods bent; body shaken.

190, composite.—Buffers bent and body shaken.

240, brake-van.—Two buffer-rods missing and body slightly damaged.

Damage to Permanent Way.

Six 21-ft. steel rails, 104 chairs, 57 sleepers 50 spikes, 8 pairs of fish-plates and 44 fish-bolts broken.

Printed copies of the above Report were sent to the Joint Companies on the 30th August.

POSTSCRIPT TO ABOVE REPORT.

Melton Mowbray Accident, July 25th, 1892.

The Assistant Secretary,
Railway Department,
Board of Trade.

Since the issue of my report on the above accident, dated July 30th, my attention has been called to the evidence given at the coroner's inquest on August 4th by the superintendent of the line of the Great Northern Railway, which places the conduct of the unfortunate driver, George Herron, who lost his life upon this occasion, in a different light from that in which, judging from the evidence and information given to me at my enquiry, I was unwillingly forced to regard it.

I have been trained to consider that an order issued by a competent authority is to be literally obeyed, but it seems that, although the slackening order received by the driver enjoined a certain speed during a certain period at a certain place, he was not, in the opinion of the superintendent of the line, and in accordance with the usual practice, in fault for not having reduced his speed, in the absence of some indication to him that the work upon the line had been actually commenced. Nothing whatever is said in the slackening order of any further notice to be given, and it is to be presumed, therefore, that it is intended that the indication to the driver that the work has been commenced should be given to him by flagmen—as no doubt should have been done in this particular case,—but I must point out that, under the existing rules, it may very well happen, as in this case, that, in the exercise of their discretion, gangers or foremen in charge of work may sometimes think it unnecessary to send out flagmen at all, unless the suggestion made by me in the last paragraph but one of my report be adopted, viz.:—that it should be imperative to send out flagmen in all cases when the work upon the line has been considered of sufficient importance to require the issue of a slackening order. Otherwise it is clear that, if such orders are to be of any practical value, some provision must be made in them to ensure that drivers are informed, by some further notice, that the work has been commenced, and that it has become incumbent upon them to reduce speed to that prescribed in the order.

Under the circumstances, however, I feel that, the evidence of the superintendent of the line being accepted as defining what is the practice upon this railway, it will only be just to withdraw the censure upon the driver for not having acted upon the slackening order without further notice of the commencement of the work, and I would be glad if an addendum to my report, in the sense of this minute, could be made before it is presented to Parliament.

F. A. Marindin,
Major, R.E.

10th September 1892.

Printed copies of the above Postscript were sent to the Joint Companies on the 7th October.

GREAT WESTERN RAILWAY.

Board of Trade, (Railway Department,)
Richmond Terrace, Whitehall, London, S.W.
4th June 1892.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in your Minute of the 21st ultimo, the result of my enquiry into the collision that occurred on the 12th May, at Buckfastleigh, on the Totnes and Ashburton Branch of the Great Western Railway.

On this occasion, as the 4.40 p.m. down passenger train from Ashburton was approaching Buckfastleigh, it ran into an up goods train, which was occupying the line outside the down home-signal.

The passenger train consisted of a passenger tank-engine (with four wheels coupled), two third-class carriages, and one composite, and it was fitted throughout with the automatic vacuum-brake.

The goods train consisted of a tank-engine (with six wheels coupled), 19 waggons, and two vans. The engine was fitted with steam and hand brakes.

Two passengers are reported to have complained of being shaken.

The goods engine and train and the permanent-way were not damaged. Some slight injuries were caused to the passenger train, for details of which, *see* Appendix.

Description.

The line between Ashburton and Totnes is single, and at the time of the collision the gauge was broad. It is worked on the train staff and ticket system, combined with the absolute block. Ashburton is a single-sided station, and is not a passing place for passenger trains, though there is a loop to enable passenger trains to pass goods trains, and goods trains to pass each other. There is also a small goods yard and shed at the west end of the station. The signals are worked by levers on the platform, and the points, which are wire-locked with the signals, are worked by hand-levers on the ground. The block instruments are kept in the booking office.

About 150 yards outside the down home-signal the line crosses the River Dart by means of a wrought iron girder bridge, and the collision occurred on this bridge. A short distance from the river there is an arched overbridge, with heavy masonry abutments and parapet, and beyond the overbridge there is the distant-signal. Between the home and distant signals the line is on a curve of 29 chains radius, and the overbridge, which is situated about half-way between the signals, renders the view along this curve very limited.

The line falls nearly all the way from Ashburton to Buckfastleigh, the gradient between the distant-signal and the overbridge referred to above being 1 in 92. From the overbridge there is a short ascent into the station of 1 in 96.

The following distances should be noted:—

From the down distant-signal	to the overbridge	-	132 yards.
„ „ „	to point of collision	-	216 „
„ „ „	to down home-signal	-	370 „

On approaching Buckfastleigh from Ashburton there is a good view of the down distant-signal for over half a mile, but owing to trees the home-signal can hardly be distinguished by a driver until his engine has passed the overbridge.

Evidence.

Robert Miller stated: I am a goods driver, and have been in the Company's service 22 years. I have been driver about three years. I came on duty on May 12th at 10 a.m. for 12 hours, having left duty the previous day at 12 noon. I left Totnes at 3.50 p.m. with a goods train consisting of 15 or 16 trucks. The train was worked by a goods six-wheel-coupled tank engine, fitted with steam and hand brakes. On arrival at Buckfastleigh we made two or three shunts into the goods shed, and after that, came back to our train with the engine. About 4.40 p.m. I had orders to draw the train over the points to allow the down passenger train to run into the station. The home-signal was at "Danger." I told the signal porter that we ought not to go out beyond the points. He replied that "Line clear" had not been given, and that we could go out over. I then drew the train over the points, the engine coming to a stand by the river bridge. We had just stopped when I saw the down passenger train coming. It was approaching at about eight or nine miles an hour. The train was inside the distant-signal when I saw it first. I did not hear the whistle blown. My engine was blowing off steam. When I saw the down train approaching I reversed

my engine and was starting to move back when we were run into. I got on the side-plate of my engine but did not jump off. The shock was a severe one. It moved our train back, but my engine was not damaged. My engine then went into the siding and we took the passenger train on to Totnes, as the engine of that train was damaged. I had the staff with my train from Totnes. I am quite certain I spoke to the shunter as to the passenger train being due, when I was told to shunt over the points.

George Holman stated: I am a fireman, and have been in the Great Western Railway Company's service 10 years. I have been fireman between four and five years. On May 12th my hours of duty were the same as Robert Miller's. We arrived at Buckfastleigh at 4.28 p.m. We did some shunting on the goods lines, leaving our train the meanwhile on the main line. After that we had orders to put two trucks on the loop line for the down passenger train to take on, and our engine then went back to the goods train. Our engine then drew the train ahead to the home-signal and then stopped, as my mate said he would not go any further, as the down passenger train was due. The signal porter replied, "It's all "right, we haven't given clear yet." The home-signal was then at "Danger." After this we went over the points and stopped just over them, and I was looking out for a hand-signal to go back again. I did not see the down passenger train until it was upon us. I cannot say what speed the train was running when it ran into us. I did not jump off the engine. After the collision we put our train into the loop siding, and our engine took the passenger train to Totnes as the engine of that train was disabled by the collision.

Daniel Norton stated: I am a shunting driver, and have been in the service of the Great Western Railway Company 16 years. I have been driver 2½ years. I came on duty on May 12th at 6.40 a.m. to work the 7.10 a.m. train ex Ashburton. I went off duty the previous night at 10.0 p.m. I was relieved on that day from 1.59 p.m. to 4.4 p.m. I have been driving trains over the Ashburton line for about two years and know the road well. My engine was a four-wheel coupled passenger tank-engine. We had the vacuum-brake on our train throughout. I tested the brake before leaving Ashburton and found it all right. We had 25 inches of vacuum. We left Ashburton with the 4.40 p.m. passenger train at right time. On approaching Buckfastleigh, I saw the distant-signal about half a mile off. It was at "Danger." I shut off steam before I saw this signal, as the line is on a falling gradient. When I saw the distant-signal at "Danger," I at once put on the vacuum-brake and whistled. I put on the hand-brake as well after I had passed the distant-signal. We were running about 20 miles an hour when we first sighted the distant-signal, and when passing that signal we were running about eight or nine miles an hour. The rule is when we see a distant-signal at "Danger," to reduce the speed and get the train under complete control. I first saw the goods train ahead as we got to the overbridge, and just after I saw the home-signal at "Danger." As soon as I saw the goods train I applied the vacuum-brake. It was on slightly all the way from the distant-signal, but when I saw the train I applied it hard. My engine was disabled. I did not jump off my engine but got on the step. I was not injured.

Clifford Palmer stated: I am a fireman, and have been in the Company's service about five years. I have been a fireman 17 months. On May 12th I was firing for driver Norton. I came on duty at 1.50 p.m. having left duty the previous night at 10.15 p.m. We left Ashburton with the 4.40 p.m. passenger train at right time, with three coaches all fitted with the vacuum-brake, which was tested before leaving Ashburton and found to be in working order. As we approached Buckfastleigh, I saw the distant-signal at "Danger." We were then about half a mile from it. My mate blew the whistle and I applied my brake, and my mate applied his also. We had shut off steam before we saw the distant-signal. When we reached that signal we were running about seven or eight miles an hour. I could not see the home-signal. I saw the goods train was standing on the river bridge just as we got to the overbridge. We were going about six or seven miles an hour when we collided. We could have pulled our train up at the home-signal. I did not jump off my engine but remained on the foot-plate.

John Smerdon stated: I am a passenger guard and have been in the Company's service 33 years. I have been guard about 27 years. I have worked on the Ashburton branch 20 years. I came on duty on May 12th at 9.15 a.m., having gone off duty the previous night at 9.39. I have time off at Totnes from 11.12 a.m. to 1.35 p.m. On the 12th of May I worked the 4.40 p.m. passenger train ex Ashburton. The train started at right time. It consisted of an engine, two third-class carriages, and one composite, fitted with the vacuum-brake throughout, which was in good working order. When we started from Ashburton we had about 18 inches of vacuum, but soon after we had 25 inches. On approaching Buckfastleigh I saw the distant-signal at "Danger." The steam was off then. The brake was applied gently after I saw the distant-signal, and kept on all the way. When we passed the distant-signal I should think the train was going about 14 or 15 miles an hour. I could not see the home-signal. The first I knew of anything wrong was that I was knocked down by the collision. I received a blow under the eye. I did not go on the sick list in consequence. When the collision happened I should think we were going about five miles an hour. None of the passengers complained to me of injury, but I learn that two gentlemen have since complained. There were about 12 passengers in the train.

Edwin Toms Bartlett stated: I am a goods-checking porter at Buckfastleigh, and have been in the service 14 years. I have been a goods-checking porter six or seven years. I have been stationed at Buckfastleigh about 10 years. On May 12th I was in charge of the station. The station-inspector was away on the business of the provident society. I came on duty at about 6.45 a.m., having gone off duty the previous night at 10.0 p.m. I was due off on May 12th at 7.30 p.m., and should have left at that time had it not been for the accident. There was a train due from Buckfastleigh at three minutes to 4, and this train came in with a ticket. This train was followed by a goods train, arriving at 4.30 p.m. It was about four hours late. This train came in with a staff. The engine of this train was uncoupled and sent into the goods lines to shunt out two trucks of goods, and place them on the loop line for the down passenger train to take away. The engine then returned to its train, which was standing at the platform, in order to shunt the train over the points back to the loop line to allow the down passenger train to run into the station. I considered this could all be done before the down passenger train arrived. I gave "Line clear" to Ashburton at 4.38 p.m., and then sent porter Lang to the signal-porter to say that I had given "Clear." The goods train was then standing on the main line with the engine in front, ready to go over the points. This goods train has never been in a similar position before, as it was so late. I meant the train to be put on the loop line after I had given "Line clear." I thought the train would clear away before the passenger train arrived. There was no misunderstanding between myself and the signal-porter. The goods train would take about five minutes to shunt over the points and on to the loop line. The down passenger train is allowed five minutes to run from Ashburton to Buckfastleigh. I

did not see the passenger train run into the goods, nor did I hear the noise of the collision. I did not know the driver of the down train would have a bad view of the home-signal. No passengers complained to me of injury. I am aware of the existence of the circular issued for our guidance, prohibiting a train fouling the clearing point after "Line clear" has been given.

William Bond states: I am a signal-porter at Buckfastleigh, and have been in the Company's service 10 years, and have been at Buckfastleigh all the time. I have acted as signal-porter for two years. I know the working of the station well. On May 12th I came on duty at 9.45 a.m., and left at 10.0 p.m. The 12.15 p.m. goods train ex Totnes on this occasion was very late; it was due here at 12.45 p.m., but did not arrive until 4.30 p.m. As it was so late I had arranged with acting-inspector Bartlett how to deal with it. My instructions were that two trucks of London goods should be shunted out of the goods shed and placed on the loop line for the down passenger train to take them on. On the arrival of the goods train I sent the engine back to make some shunts on the goods lines, and after we had done what was required the engine returned to the head of its train, and I signalled the driver to shunt ahead over the points. Goods guard Peters then told me Ashburton had asked "Line clear" for the down train, and said the train ought not to go outside the home-signal. I did not hear the driver say anything. I replied to Peters that they could not have given "Line clear," and I then signalled the driver over the points. I then looked back towards the station, and saw the acting-inspector waving to go over the points. I was not then aware "Line clear" had been given. The passenger train soon after approached. I should think it was coming about seven or eight miles an hour when the collision occurred. If I had known "Line clear" had been given I should not have shunted the goods train over the points. I am aware of the regulations in reference to this.

George Lang stated: I am a porter at Buckfastleigh, where I have been stationed about four years. I know the station well. I came on duty on May 12th at 6.45 a.m. until 6.45 p.m. About 4.40 p.m. I was in the booking office. I went there with some way bills. Goods-checking porter Bartlett said to me, "Tell them train has asked clear down." I went outside and told goods guard Peters, who was walking up the platform, that "Line clear" had been asked by Ashburton. I then went about my work. I heard the engine of the down passenger train whistle. The train was outside the home-signal then. I did not hear any conversation between porter Bond and the driver. When I saw the down passenger train run into the goods, it was going at about seven miles an hour, I should think. The collision was not very severe. When Bartlett told me to tell them he had given clear, I understood that Ashburton had asked clear and that "Line clear" had been given.

George Peters stated: I am a goods guard in the service of the Great Western Railway, and have been in their employ 23 years. I have been a goods guard 20 years. On the 12th of May I worked the 10.25 a.m. goods train from Newton Abbot to Ashburton. My hours of duty on this date were from 9.55 a.m. to 6.0 p.m. On arrival at Buckfastleigh my train consisted of 19 trucks and two vans. After arrival our engine was cut off and sent to the goods shed for the purpose of shunting out two trucks of London goods, and placing them on the loop line to be taken on by the 4.40 p.m. passenger train ex Ashburton. Our train during this time was standing on the platform line at the station. The engine was then brought to the front of our train for the purpose of shunting it on to the loop line to allow the down passenger train to arrive. At this time I was walking up the platform from the tail of the train, and porter Lang called to me from the booking office door "They have asked clear from Ashburton for the "passenger train." I then went towards the engine which had commenced to draw the train ahead, and called to the signalman, "They have asked clear for the down passenger train," and remarked that it would not do to go outside the home signal after that. I said this to the enginemen, and I gave them a signal to stop, the driver saying to me that he did not think it would do to go outside the home-signal with the train. The signal porter then said to the driver, that as the train was not off Ashburton, there would be time to go over the points and back on to the loop. We then went over the points and just as we came to a stand the passenger train ran into us. I knew there was a collision by the sound of the engines coming together. I was not hurt. I saw that the home-signal was at "Danger."

William Ashburner stated: I am an inspector in the Company's employ. On May 12th I was in the 4.40 p.m. train ex Ashburton. I felt the brakes applied about half a mile beyond the distant-signal. They were then released a little. I think when the collision occurred we were going about six or seven miles an hour. The shock knocked me off my seat, but I was not injured.

Conclusion.

It appears from the evidence that on the date of the collision, viz., 12th May, the up goods train, which is due at Buckfastleigh at 12.45 p.m., did not arrive till 4.30 p.m., being $3\frac{3}{4}$ hours late. In the absence (on duty) of the station inspector, goods checking porter Bartlett was in charge of the station, and he arranged with signal-porter Bond that the goods train should be placed in the loop, to allow the down passenger train, which was due at 4.40, to pass. But before this was done the goods engine was detached from its train and sent to do some shunting, in order to place in a convenient position two goods waggons, which were to be attached to the passenger train. Having finished the shunting the engine returned to its train, which was standing on the main line by the platform. At 4.38 p.m. Ashburton asked if the line was clear for the 4.40 passenger train, and porter Bartlett at once gave the "Line clear" signal, and then sent porter Lang with a message to the men outside that he had done so. Porter Lang met goods guard Peters outside the booking-office and gave him the message, but instead of saying that "Line clear" had been given to Ashburton, he merely said that Ashburton had asked for "Line clear." In the meantime signal-porter Bond, in accordance with the arrangement between himself and Bartlett, signalled to the driver of the goods train to draw down over the points, so as to set back into the loop, the down distant and home signals being at danger. When the engine reached the points the driver and guard hesitated about going

outside the home-signal, as they knew that the passenger train was nearly due, and had asked for "Line clear," although neither they nor porter Bond knew that Bartlett had sent "Line clear" to Ashburton. Bond assured them that it was all right, and Bartlett also gave a hand-signal from the platform for the train to draw ahead. The driver, therefore, carried out the orders, and drew his train down so as to clear the loop points. He had just brought his engine to a stand on the bridge over the Dart, and was about to set back when he saw the passenger train approaching him through the overbridge, and the collision occurred immediately afterwards.

The passenger train had left Ashburton at 4.40, and is due to leave Buckfastleigh at 4.46, so that, allowing one minute for the stop at the latter place, it may be said that the run between the two places, which are $2\frac{1}{2}$ miles apart, occupies five minutes. On approaching Buckfastleigh the driver saw the distant-signal at danger. He at once applied his vacuum-brake and sounded his whistle. On passing the distant-signal he partially released his brake, probably because of the ascending gradient from the overbridge into the station. As he reached the overbridge he saw the goods train in front of him, and at once applied his brake hard, and the speed of the train was reduced to about six or seven miles an hour when it struck the goods train.

In order to guard against accidents of this nature the Great Western Railway Company had issued in 1888, in addition to the general rules in the Rule Book, very clear instructions to signalmen, in which it is forbidden to foul the line outside the clearing point (in this case the home-signal) at any station, after "Line clear" has been given to the station in rear. And there is also a local order, dated September 1888, applicable to Buckfastleigh, which says, "Line clear" must not be given to Ashburton or Totnes during the time a goods train is shunting at Buckfastleigh.

In the face of these orders porter Bartlett, who was at the time acting as station inspector, sent the goods train on to the main line outside the home-signal, after he had given "Line clear" to Ashburton for the passenger train, and the responsibility for the collision must therefore rest upon him. I am bound to say that he gave his evidence in a very truthful manner, and made no attempt to evade his responsibility, or to make others share it. He had been on duty 10 hours at the time of the collision.

The driver of the passenger train cannot, however, be held altogether blameless in the matter. Rule No. 47 in the General Rule Book lays down that: "When an "engine-driver finds a distant-signal at danger he must immediately reduce the "speed of his train, so as to be able, in case of need, to stop at such signal; but if he "sees that the way in front of him is clear, he must proceed slowly and cautiously "within the distant-signal, having such control of his train as to be able to stop "short of any obstruction that may exist between such signal and the home-signal, "&c., &c."

Owing to the curve and the overbridge, the view along the line is, as already explained, very limited between the distant and home signals, and therefore there was all the more reason for the driver, after passing the distant-signal at danger, to proceed with caution. He admits that he saw the goods train ahead of him, as he passed the overbridge, which is 84 yards from the point of collision. Had he been proceeding "slowly and cautiously" he would have been able to pull up his train, which was a light one and fitted with the continuous-brake, within that distance on an ascending gradient of 1 in 96. I have no doubt that he was prepared to pull up at the home-signal, but the rule expects more than this, and it was his duty to adhere strictly to the rule. If he had done so on this occasion the collision would have been averted. He had been on duty 10 hours and 5 minutes at the time of the mishap.

I do not think any other servants of the Company were in fault, as they were acting under the orders of Bartlett, but the occurrence seems to indicate some slackness in station working at Buckfastleigh. I would recommend that steps should be taken to improve the view of the home-signal by increasing its height, and removing those trees, which at present conceal it, and it would also be desirable to increase, if possible, the distance between the home and distant signals, which at present are only 370 yards apart. But no improvement in the signalling arrangements will suffice to avert collisions such as that described above, unless the rules laid down are strictly adhered to by all concerned.

I have, &c.,

H. A. Yorke,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

List of damage done to Rolling Stock.

Passenger engine "Bury."—Both trailing-buffers broken; left-hand trailing-buffer plate broken; brake screw bent; ash-pan bent up badly; steam-brake cylinder cover broken.

Third-class No. 572.—One iron head-stock bent; two buffer-castings broken; two quarter lights broken.

Composite 510.—Three buffer-castings broken.

Printed copies of the above Report were sent to the Company on the 18th June.

GREAT WESTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
5th November 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 10th ultimo, the result of my enquiry into the accident that occurred on the 12th September in the cutting between Devonport and Saltash on the Great Western Railway, when the engine of a ballast train and six waggons left the rails and ran along the ground for about 40 yards, till they were brought to a stand by the engine turning over on to its left side.

The guard of the train, Henry Pope, who was travelling on the engine in order to point out to the driver the places where the train was to stop for unloading ballast, was killed, but the driver and fireman escaped with a few minor injuries.

The train consisted of tank engine No. 1,293 (having six wheels coupled), 10 waggons, and a brake-van. The four waggons nearest to the engine were empty, the other six being loaded with ballast. There were 29 men with the train, exclusive of driver and fireman, and none of these were injured, except the unfortunate guard, who met his death.

The engine and seven waggons sustained a good deal of damage, for details of which *see* Appendix.

The permanent-way, which was of the old Great Western type, was torn up for about 41 yards, 20 yards of longitudinal timbers, transoms, and rails being broken and destroyed.

Description.

The accident occurred close to 250¼ mile post in a shallow cutting between Devonport and Saltash. The line, which is single, has a curve to the left looking in the direction of Saltash, of 1,400 feet or about 21 chains radius. The gauge was formerly broad, but it has been recently converted and is now 4 ft. 8½ ins., the change having been effected by shifting the inner rail of the curve nearer the outer rail. The train was travelling towards Saltash, in which direction there is a rising gradient of 1 in 61, and the speed was about 20 miles an hour.

The permanent-way consists of steel rails weighing (in their original condition) 62 lbs. per yard, and supported by longitudinal sleepers. From the date on the rails it is probable that they were first put down in 1876, and would be about 16 years old, but there is no definite information on this point. The outer rails of the curve appear to have been a good deal worn on the inside, so far as I could judge from an examination of that portion of the permanent-way which was not destroyed by, or has not been renewed since the accident, and rails so worn would present a sloping surface to the flanges of the wheels.

The normal super-elevation of the outer rail is stated to be between 3 and 4 inches, but owing to the recent change in the position of the inner rail, the ballast under the latter is not properly consolidated, and the rail had sunk so as to make the difference of level between the two rails as much as 6 inches in places. The rail in question has already been lifted three or four times since the change of gauge, and a gang of six men were engaged in performing the same operation over again at the time the accident occurred.

The first and only mark indicating the spot where the engine left the rails was found on the outer rail of the curve about 14 yards short of the 250¼ mile post. From this point the road was more or less destroyed till the engine turned over on its side about 27 yards beyond the same post, making the total distance run by the engine along the ballast 41 yards. After the accident the engine was found on its left side with the funnel in the 4-ft. way between the rails, and the left-hand corner of the bunker against the side of the cutting. The six trucks nearest the engine were off the rails, but the rest of the train remained on the line.

The weight of the engine is 42 tons 15 cwt., distributed in the following manner, viz. :—

Leading wheels - - - -	14 tons.
Middle wheels - - - -	14 tons, 6 cwt.
Trailing wheels - - - -	14 tons, 9 cwt.

all the wheels being coupled.

An examination of the springs of the engine since the accident disclosed the following fractures, viz. :—

Left-hand leading-spring.—One plate freshly broken.

Left-hand trailing-spring.—One plate broken, the fracture being partly old and partly new.

The flanges of the engine-wheels are in good condition, and there seems nothing, so far as the condition of the engine is concerned, to account for the accident.

Evidence.

Thomas Gluyas stated: I am a goods driver, and have been in the Company's service 20 years. I have been a driver nine years. On 12th September 1892, I came on duty at Plymouth at 4.15 a.m., having left duty the previous day at 2.10 p.m. I then worked an empty engine to Lostwithiel, in order to start with a ballast train from there at 6 a.m. I did some shunting there, and left at 6.58 a.m. for Bodmin Road with 10 empty ballast trucks and one van. We then made a trip to the quarry and back, and we then left for Devonport with the ten trucks loaded with ballast. We reached Devonport at 12.45 p.m., and, after doing work there, we left again for the return journey at 3.25 p.m. with four empty trucks next the engine, and six loaded trucks and a brake van at the tail. My engine was No. 1,293, a six-wheel coupled tank-engine. I have been driving her for about two months, and there was nothing wrong with the engine so far as I know. I have never had occasion to find fault with the engine. We left Devonport at 3.25 p.m., and were not stopped until the accident occurred. This was about 3.32 p.m. On approaching the cutting I was not aware there was any work going on. There were no men working there when we passed in the morning, at about noon. I did not notice any tools about. I had no idea that any work was going on there. I should say we were running about 20 miles an hour when we left the rails, which are on a rising gradient of 1 in 61. I had steam on. The first intimation I had that work was going on was when my mate sounded the whistle. This was as we were going around the curve near the overbridge. I gathered from this there were men working on the line. There was no flagman out. I did not make any remark to my mate, and did not shut off steam until I thought the engine lurched. There was nothing to lead me to suppose the road was defective. I felt the engine give an unusual lurch. I shut off steam, and put on the steam-brake. The engine was jumping, and I thought we were off the road. I do not know what side we got off the rails. We ran about 52 yards after we got off to where we stopped. When the engine turned over on its side I stood on the foot-plate of the engine. After she turned over I crawled out from under the cab. At the time of the accident, fireman Butler and ballast guard Henry Pope were standing on the foot-plate of the engine. The latter got on the engine at Devonport. He was there to give instructions where we had to stop to put out ballast. The other guard with the train rode in the tail van. When the accident happened I received a cut over my right ear, my left thigh was scalded, and my right shoulder and left foot were bruised. I hope to go to work again next week. After I got off the engine I did not see anything of the guard, nor what had become of him. The steam was escaping so much I could not see anything. I did not feel anything in the road unusual until the engine began to lurch. I cannot say what caused us to get off the line.

William Butler, fireman, stated: I am a goods fireman, and have been in the Company's service seven years. I have been a fireman about three years. I have been firing for driver Gluyas about 18 months. I came on duty with my mate about 4 a.m. on September 12th, and worked with him until the accident occurred. I did not work the previous day, it being Sunday. On September 12th we left Devonport at 3.25 p.m., and as we approached the cutting, where the engine left the rails, I saw men working on the line. This was just as we reached the overbridge. We were then about 100 yards off. When I saw them I at once blew the whistle. When I first caught sight of them they were lifting the timber of the rails with a lever, and were just taking the lever out. We were then going about 20 miles an hour. I did not see a flagman. I then felt the engine get off the road. I cannot say which side the engine got off. I felt the engine lurch. I remember nothing more until crawling out from the engine to the side of the cutting. I was dazed and bruised by the accident, and had to stop work for a few days. Ballast guard Pope was on the foot-plate on my side when the accident occurred, just in the corner of the cab. I cannot say what he did, and I never saw him after the accident. The engine was on her side when I got out, the chimney being between the rails, and the bunker end against the bank. I cannot say what sent us off the line. I am quite positive I saw the men taking the lever out from under the rails at the time we approached the cutting. This was done just as I sounded my brake whistle. I received several bruises about the body by the accident.

William Talling stated: I am a ballast brakesman in the employ of the engineering department, and have been in the Company's service between six and seven years. I have been a ballast brakesman about 18 months. I came on duty at 6.0 a.m. on

September 12th. I did not work on the previous day; it was Sunday. I was with the ballast train on the 12th of September up to the time of the accident with the same driver. At 3.25 p.m. we returned from Devonport with six loaded trucks and four empties. The empties were next the engine, and I rode in a van at the tail of the train. There were 29 men with the train. The guard in charge was riding on the engine. As we approached the cutting where the accident occurred I did not notice anything unusual. I saw no flagman out, nor any men working on the line. I was looking out on the left-hand side as we were running. This was only just before the accident happened. I did not know any men were working there until after the accident. My van was not thrown off the rails. After the accident I saw that several trucks were off the line, and knocked about badly, and that the engine was on its side against the side of the cutting. I was thrown down in the van. This was when I tried to put on the brake. I should think the train ran about six or seven yards after we got off. After the accident I saw some of the permanent-way men, and I went up to them and asked where my mate Pope was, and I was told he was under the engine. I then went back to Devonport to report what had happened. I cannot say what the men were doing to the line, as I did not see them at work.

George Sleep, ganger, stated: I am a ganger of permanent-way in the employ of the Great Western Railway Company, and have been in the service six years. I have been ganger about 10 months. On the morning of the 12th of September, I was at work with five men in the cutting between Devonport and Saltash near 250¼ mile post. We had been taking out low places on both rails, before the accident occurred. I considered the cant should be about 3 or 4 inches. On this morning, I found the rail had gone down. We were raising the low rail. This was to bring it within 3 inches. Before we began to raise it, it was 4 or 5 inches. I believe there was a place nearly 6 inches at the lower end. I was working there when the ballast train ran through in the morning. I knew the train would return. There were no other trains due when the ballast train ran down. The first passing train would be at 12 minutes after 4, and the ballast train approached at about 3.30 or 3.32 p.m.; we had lifted a rail and were packing it. We had no lever under the rail then; it was taken out before the train approached. I did not hear the ballast train until it came in sight; it was then below the overbridge. I did not notice the sound of the engine-whistle. At the time the ballast train approached all of us were packing the rails with shovels. We had lifted the rail about 2 inches one end. The ballast was holding it up in that position. When we first saw the ballast train coming we had plenty of time to get out of the way; we were all on the left-hand side. Before we saw the train I should think the lever had been taken out a minute or two; I am certain we had not the lever under the rail when the ballast train came in sight. I know the rule as to sending out a flagman when the line is being lifted. I did not send out a flagman on this occasion as the rail we were lifting was sufficiently packed to be quite safe. The engine got off about two rails from where we were working, and we had not been working at that spot since the morning. We had finished our work there. I cannot say what caused the engine to get off the line; it was right to gauge. I tried the gauge that morning; it might have been about a quarter of an inch wide. This is usual on a curve. I do not know how long the rails have been down. We had been at work in this length since the conversion of the gauge. I think this is the third or fourth time we have had to lift the rails since the change of gauge. I have never known anything get off there before. I consider the road was in good order. The rails were a little worn. I did not think it necessary to call my inspector's attention to this part of the curve. We often send out flagmen when it is needed. We do not do this when we are only slightly lifting the line for short lengths. We had only one lever with us on this day.

Charles Harris, inspector, stated: I am inspector of permanent-way stationed at Lostwithiel, and have been in the Company's service about 20 years. I have been inspector 17 years. I had been on leave six days when this accident happened. My attention has never been called to anything wrong on the part of the line in question. I arrived at the scene of the accident about six hours after it occurred. The engine was still lying on its side. The line was knocked about so much that I could not say what might have caused the accident. When lifting the line the ganger in charge is supposed to send out a flagman if necessary; I have never had to pull up a ganger for not having done so, when he ought. I do not think a flagman was necessary on the occasion in question, as the ganger was only lifting two inches on one rail. I do not think there was anything wrong with the permanent-way. I cannot say whether or not the cant was too much on this occasion. I consider that a 2-inch lift is better to make than one, but I do not think a train would pass safely with a 2-inch lift not properly packed up.

Conclusion.

Although it is difficult to define the exact manner in which this fatal accident occurred, there can, I think, be no doubt that it was chiefly due to the work in progress on the permanent-way at the place where the train left the rails.

As already stated, the normal super-elevation of the outer rail on this curve is about 3½ inches, but owing to the change of gauge, and the sinking of the inner rail consequent thereon, the super-elevation on the morning in question was in places as much as 6 inches. The ganger and his men were at work on the curve rectifying the super-elevation by lifting the inner rail, when the ballast train approached them. They had just lifted the end of one of the inner rails to the extent (as stated by the ganger) of two inches, and were shovelling the ballast under the longitudinal sleeper, when the train came in sight round the curve. The men got out of the way of the train, and just after it passed them the engine mounted the outside rail of the curve, with the results already described.

The unfortunate guard who lost his life was standing on the left-hand corner of the foot-plate, and was crushed between the fire-box and the framework of the cab, which was bent inwards by the overturning of the engine. Some time elapsed before he could be released, and he was then dead. The driver and fireman were thrown down,

but were able to crawl out over the right-hand side of the cab, which was then uppermost. Clouds of steam and water were at that time escaping from the engine owing to the breaking of the gauge-glass, and they were quite unable to see the guard, nor could they have assisted him, for he was tightly held as in a vice by the framework of the cab.

There is a conflict of evidence between the fireman of the train and the ganger as to whether the lever used in lifting the rail was under the sleeper or not when the train first came into view of the men. The fireman, who was looking out on the left-hand side, asserts that the lever was under the sleeper when he first saw the gang, and that he saw it withdrawn. The ganger is equally sure that the lever had been withdrawn before the train came in sight. Of the two I am inclined to think the fireman is right, as he probably viewed the men before they saw the train.

Assuming the inner rail to have been lifted two inches at the upper end, the difference of level at this point between the outer and inner rails would become about three inches, the difference before the lifting being said to be about five inches. But the ganger admits that at the lower end of the same rail the difference of level between the two rails might have been as much as six inches. If this was the case it is clear that the four ends of the two rails could not be in the same plane, and that the wheels of the engine could not all be touching the rails at the same time, or if touching, could not all be supporting their due proportion of weight.

The engine is so balanced that the greatest weight falls normally on the trailing wheels, and the centre of gravity is, contrary to the recommendations of the Board of Trade, which however only refer to passenger trains, behind the driving wheels. The weight on the trailing wheels would be slightly increased by the gradient. The trailing end of the engine would therefore drop to whatever extent was permitted by the rails, and as the left-hand rear corner would, owing to the conditions in existence, be the lowest point, the right-hand leading corner would become the highest point, and the right-hand leading wheel would be more or less completely lifted off the rails. The outer rail of the curve being as I have stated, a good deal worn, would present a sloping surface to the right-hand wheels of the engine. Such a combination of circumstances would render a "run off" a probable occurrence, and if to the above conditions is added, the not unlikely fact that the gang had not time to put sufficient ballast under the longitudinal timber below the rail to ensure its uniform support from end to end, the probability of an accident would be increased.

I do not put this theory forward with the intention of positively asserting that the disaster was caused in this manner, but rather as a possible solution, and as showing how easily, when work is being done to the permanent-way, the safety of the line may be affected. At any rate I am unable to avoid the conclusion that the accident was in some such way connected with the work in progress on the line, combined with the manner in which the engine was balanced, and the worn condition of the outer rail of the curve.

The question arises as to whether ganger George Sleep is to blame for not sending out a flagman in each direction to warn drivers of approaching trains that work was in progress on the line, which rendered it necessary for them to proceed with caution. The rule that bears on the subject (No. 323, Rules and Regulations) is as follows:— "When repairing, lifting the line, or performing any operation so as to make it "necessary for a train to proceed cautiously, the foreman platelayer or ganger must "send a man back at least half a mile, or as much further as the circumstances of "the case render necessary, who must fix a detonator on one rail of the line for which "he is signalling, and exhibit a caution-signal in such a manner as will ensure it "being plainly visible to the engine-driver of an approaching train." This rule, as it stands, seems to leave it to the discretion of the ganger as to what constitutes an operation which would "make it necessary for a train to proceed cautiously," and Sleep states that in his opinion the work he was performing was not of this nature. In this he is supported by the inspector of permanent-way Charles Harris, and under these circumstances I am not inclined to blame ganger Sleep for anything more serious than an error of judgment in not sending out a flagman when it was within his discretion to do so. Facts prove that he was wrong, and the limited view along the line, due to the curve and the cutting, rendered it on this occasion all the more desirable that flagmen should have been sent out, both for the protection of the men themselves, as well of approaching trains.

In the above remarks, I have accepted as correct the ganger's statement as to the nature and extent of the works in progress. But it is at least possible that he underestimated the height to which the rail was lifted, and it does not seem right that

operations involving a risk, however slight, to passing trains, should be carried out on the responsibility, and at the discretion of a man in the position of ganger.

Since the accident the following notice has been issued from the Engineer's Office at Plymouth:—

"Whenever it is necessary to lift the road in order to adjust the cant, or for "any purpose other than taking out short slacks, flagmen must be sent out to stop "all trains, and not recalled until the line is solidly packed and the lifts properly run "out."

"The inspector should be advised when work of this kind has to be done, and his "instructions taken."

This is satisfactory, but it would seem to be applicable only to the Plymouth section of the line, whereas I venture to think that some such instructions should be generally adopted.

I have, &c.,
H. A. Yorke,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Memorandum of Damage done to Engine No. 1293.

Left-hand trailing-buffer broken; both leading-buffers broken; both life-guards damaged (bent); back tool-boxes broken; steam-brake cylinder and pipes broken; trailing-drawbar bent; coal-bunker badly broken; cab and weather-board badly damaged and broken; hand-rails bent; left-hand outside rods bent; brake-gear and shoes broken; left-hand leading crank-pin broken; left-hand splasher broken; left-hand leading corner of tank broken in; fastening of smoke-box door broken in; vacuum-pipes broken; steam-chest cocks and rods broken off; cylinder cocks and rods broken off; gauge-cocks and glass broken; spring-balance and lever damaged; top lubricator broken off; left-hand leading sand-box and pipes broken; reversing-gear damaged.

Memorandum of Damage done to Waggons.

Waggon No. 40,673.—Two sides and ends broken and bent; two axle-boxes broken; one brake-rack broken; two buffer-rods bent; two axle-guards bent; one axle bent.

Waggon No. 40,675.—Two ends broken; one buffer-rod broken; two headstocks broken; axle-box keeps broken; brakework bent.

Waggon No. 40,685.—One headstock bent; two axle-guards bent; one coupling-link bent; one flapstop broken.

Waggon No. 40,654.—Badly damaged, and lying against the embankment.

Waggon No. 40,670.—One end badly broken, coupling-link bent.

Waggon No. 40,687.—One end stanchion broken.

Waggon No. 40,302.—One axle-guard bent.

Printed copies of the above Report were sent to the Company on the 23rd November.

GREAT WESTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
9th December 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 28th ultimo, the result of my enquiry into the collision that occurred on the 14th idem, at Hatton station, on the Great Western Railway.

On this occasion, as the Stratford portion of the 5.20 p.m. passenger train from Leamington was standing outside Hatton station, but inside the home-signal, a light engine from Leamington overran this signal and collided with the rear vehicle of the train.

Three passengers are reported to have complained of minor injuries.

The train on leaving Leamington consisted of two vans, two thirds, and two composite carriages for Birmingham, and two vans, two thirds, and two composite carriages for Stratford, making a total of 12 vehicles, all six-wheeled.

The light-engine was No. 215 side-tank engine having four wheels coupled, and fitted with the hand-brake and steam-brake, and capable also of working the automatic vacuum-brake on a train. It was running bunker in front.

The engine and permanent-way were uninjured, and the damage to the train consisted of two buffer-castings on the rear van and two roof-lamps broken.

Description.

Hatton station is the junction between the Great Western main line to Birmingham and the branch to Stratford.

There are three running lines, as distinct from sidings, through the station, viz., the up and down main lines, and the single branch line, the latter being connected with the up main line by a through crossing by means of points Nos. 14 and 15, and with the down main line by means of No. 12 points near the end of the platform. The south signal-cabin is about 90 yards from the station, and the down main home-signal is 89 yards south of the cabin, and 63 yards from the point where the through crossing (Nos. 14 and 15 points) just referred to crosses the down main line. The 5.20 p.m. train from Leamington consists of two portions each containing six vehicles, of which the front portion is for Birmingham and the other for Stratford. The regular mode of working is to stop the train outside the station and to uncouple the Birmingham portion which is then drawn up to the platform by the train engine, leaving the Stratford half standing on the down main line opposite the signal cabin. The Birmingham train subsequently goes forward to the north end of the station, is then set back on to the branch platform line to pick up the coach or coaches from Stratford to Birmingham, and then starts away for the latter place. As soon as this portion has gone forward from the down main platform, the engine which has brought in the 5.15 p.m. train from Stratford for Leamington (due at Hatton at 5.40) is transferred from the branch to the down main line through No. 12 points, and is attached to the Stratford portion of the train from Leamington, which, as already explained, is standing on the down main line near the signal-cabin. This portion of the train is then in its turn drawn up to the down main platform, and eventually goes on to Stratford after picking up a slip-coach which is left on the up main line by the 5.8 p.m. express from Birmingham to Leamington. Meanwhile a light-engine from Leamington arrives at Hatton, which, as soon as the Stratford portion of the train has cleared either No. 15 or No. 12 points, is shunted on to the branch through one or other of the points named in order to work the train from Stratford back to Leamington. This engine is due to arrive at Hatton at 5.40 p.m. and to leave again with the train for Leamington at 5.48, but on the day in question it was five minutes late in arrival.

There is an ascending gradient in the direction of Hatton of 1 in 105 from the down distant-signal for a distance of about 545 yards, from which point up to the station the gradient is 1 in 2,786.

The following distances should be noted, viz. :—

From the down distant-signal to the down home-signal	-	806 yards.
„ „ „ home-signal to the point of collision	-	63 „
„ „ „ „ „ signal-cabin -	-	89 „

The rear vehicle of the Stratford train was standing on No. 15 points at the time of the collision, and both the home and distant signals were at danger.

Evidence.

Charles Gleed, driver, states: I have been in the Company's service 40 years, and I have been about 26 years driver. On November 14th I signed on duty at 1.5 p.m. at Bordesley junction, having come off duty at 11.45 p.m. on the previous night. I was working local trains between Birmingham and Dudley and Leamington up to 5.15 p.m. on the 14th. I then had to leave Leamington light to work a train from Hatton to Leamington. I left Leamington at 5.25 p.m. and was stopped at the starting-signal at Leamington seven minutes, waiting for "Line clear." At 5.32 p.m. the starting-signal was lowered for me, and I went right away. On approaching Budbrook the signals were against me, but they were lowered for me before I reached them and I was not stopped. On approaching Hatton junction both home and distant signals were at danger. I could see the distant-signal a quarter of a mile off. I shut off steam after passing the distant-signal. I was running then at about 15 or 16 miles an hour. My mate applied the hand-brake when opposite the up advance, which is about 300 yards from the down home-signal. The wheels picked up, and I told him to release the hand-brake, and I then applied my steam-brake. The wheels picked up again, and I then opened the sand-pipe. I then reversed my engine when about 50 or 60 yards outside the home-signal, but this had no effect. My engine then collided with the tail of the 5.20 train from Leamington to Birmingham and Stratford. The train was standing 63 yards inside the home-signal. I struck the train at about two miles an hour. No damage whatever was done to my engine by the collision. No injury was done to me or to my mate. The wheels of the train in front did not leave the rails, but two buffer-castings on the rear brake coach were broken. My engine was No. 215 side-tank engine, with four wheels coupled in front, and fitted with the hand-brake and steam-brake, and there is also a lever working the vacuum brake on the train. I have been working the same line for two months past, my turn for this particular train coming about once a week. I am thoroughly aware of the working, and I knew clearly what I had to do that night. The signals are always against me on reaching Hatton, and I have to wait at the home-signal until I get a hand-signal from the signalman

to draw forward past No. 12 points, and then to set back into the siding to be attached to the Stratford train for Leamington. I saw the train on the line in front of me when passing the up advance signal. The tail lights were all burning. None of the tail lights were put out by the collision. The rails were greasy, there had been a little rain during the afternoon. I can only account for the collision by the wheels picking up, and this I attribute to there being flat places in the wheels due to skidding before I had the engine and the brake-blocks getting hold of these flat places. There is a rising gradient of 1 in 105 from beyond the distant-signal to the up advance-signal, and from there to the station it is practically level. I only had been driving this engine for a week previous to the collision, my own engine being under repair. I have mentioned the fact that the wheels were worn flat in places to the chargeman at Bordesley shed, and after the collision I told Mr. Humphreys and Mr. Armstrong that I attributed the wheels picking up to their being worn.

George Jones, fireman, states: I have been in the Company's service about 15 years and about eight years fireman. I came on duty on the 14th instant at 12.50 p.m., and I came off duty at 11.45 p.m. the night before. I have been firing for driver Gleed about four or five months. I have heard the driver's statement and I corroborate it. The hand-brake was applied just about the up advance-signal, when we were travelling about 12 miles an hour. The wheels picked up and my driver told me to release the brake, and he applied his steam-brake, and I opened the sand-pipe. We were then about 50 or 60 yards from the down home-signal. We were not running any faster than usual. My driver spoke to me on the morning of the 14th about the wheels being worn flat in places, but I did not hear him speak to the chargeman at Bordesley shed, though I heard him mention the matter to Mr. Humphreys after the collision. The rails were greasy. I have not known of a difficulty before in stopping the engine.

William Thomas Hall, signalman, states: I have been in the Great Western Railway Company's service 23 years, and 13 years signalman at Hatton. I came on duty on the 14th at 7 a.m., and remained till 12.45 p.m., and I came on again at 2.35 p.m. to remain till 7 p.m. My box is a 10 hour box. I came off duty at 7 a.m. on the 13th. The 5.20 p.m. train from Leamington reached Hatton at 5.39 p.m., which was four minutes late, and stopped at the usual place so as to drop the Stratford portion on the Leamington side of No. 12 points. The Stratford portion was then uncoupled and the Birmingham portion drew past the main platform, and set back into the down branch platform to pick up two slip coaches from Stratford for Birmingham. It got away on the 14th at 5.49 p.m., which is four minutes late. As soon as the Birmingham portion of the train was clear of the down main, the engine from Stratford crossed over through No. 12 points on to the down main line, and was attached to the Stratford portion of the train from Leamington. This would be about 5.44. At 5.40 p.m. I got the "Is line clear" signal from Budbrook for the light engine. I accepted it at once, and at the same time received "Train on line." At 5.45 the light engine arrived and ran into the tail of the Stratford portion of the Leamington train, which was still standing outside the platform. As a rule the Stratford train is standing at the down main platform, when the light engine arrives. The home and distant signals were at danger when the light engine arrived. The usual practice is to bring the light engine to an absolute stand at the home-signal, and then to hand-signal the engine by a green hand-lamp into the station so as to get past the points leading into the down branch. If the 5.25 p.m. Stratford portion has gone forward past No. 19 down starting-signal before the light engine has reached the home-signal, I do not bring the light engine to an absolute stand, but when it is nearly at a standstill, I give the driver a green light to allow him to come past the home-signal without stopping. Absolute block is worked in both directions. The clearing point at Hatton for down trains is the down home-signal. And the rule is that "Line clear must only be given for a passenger "train and for a goods train following a passenger "train when the line is clear to the clearing point." The engine took the usual time (five minutes) in coming from Budbrook.

Mr. Humphreys, locomotive foreman at Birmingham, states: The day after the collision, 15th instant, driver Gleed spoke to me and said that the collision was due to the flat place in the tire. In my opinion the flat place is not sufficiently marked for the block to grip it. My opinion is that if the driver had applied his brake where he stated, he would have stopped before reaching the home-signal without any difficulty.

Conclusion.

This collision must be attributed to carelessness on the part of the driver of the light engine, who approached the station at such a speed that he not only failed to stop at the home-signal, but ran 63 yards past it, and was still travelling according to his own statement, at two miles an hour when his engine struck the train for Stratford, which was standing on the down main line between the home-signal and the station.

Driver Gleed acknowledges that both home and distant signals were against him, and that he saw them both clearly. He further states that he approached the distant-signal at about 16 miles an hour, that he shut off steam on passing it, that he caused his hand-brake to be applied 300 yards from the home-signal, that subsequently he applied his steam-brake, opened the sand-pipe, and as a last resort reversed his engine, but in spite of all these measures he failed to stop his engine at the proper place owing to the skidding of the wheels. He accounts for his failure by saying that the rails were greasy, and that the wheels of his engine are worn somewhat flat in places, causing the brake-blocks to grip the wheels more readily than would otherwise happen.

I am unable to accept this version of what happened, for if he had been running, as stated, at only 16 miles an hour when he shut off steam at the distant-signal, his engine would probably not have reached the top of the gradient of 1 in 105, which extends for a distance of 545 yards from that signal in the direction of Hatton, and he certainly would have stopped short of the home-signal without any application of the brake. Moreover, the distance from Budbrook to Hatton is $2\frac{1}{2}$ miles, and the time

occupied in traversing this was five minutes, which gives an average speed of 30 miles an hour. It is therefore clear that he must have been running at about double the speed he states when he passed the distant-signal.

Again, even if his statement that the rails were greasy is correct, I am unable to regard this as an excuse in the case of a driver of 25 years' experience as such; and with regard to the wheels being worn flat in places, the defect is stated by the locomotive foreman to be too slight to have any such effect as is attributed to it, and no difficulty has been discovered in stopping the engine either before or since the collision.

My impression is that driver Gleed passed the distant-signal at a speed of at least 30 miles an hour, that he did not shut off steam till he was at the top of the incline of 1 in 105, that he did not apply his brake till he was close to the home-signal, and that knowing what he had to do on arrival, he had no intention of stopping at the home-signal, but meant to run past it up to No. 15 points through which he would have to set back in order to reach his train on the branch line.

The rule in force at Hatton junction is for the signalman to bring the light engine to an absolute stand at the down home-signal, and then to admit it within station limits by means of a hand-signal so as to allow it to reach the points which give access to the branch line. As a rule the train for Stratford is standing at the down main platform, and not opposite the signal-cabin when the light engine arrives, so that the latter would be permitted by the signalman to run forward to No. 15 points immediately on arrival. Driver Gleed, acting on the assumption, as I believe, that as usual the Stratford train had been drawn forward beyond No. 15 points and was at the platform, and knowing he was five minutes late, made no attempt to come to a stand at the home-signal, but ran forward to No. 15 points without waiting for the signalman's permission. Unfortunately the trains were all a few minutes late in arriving at and departing from Hatton, and the Stratford train, which should have been in the station, was still standing over No. 15 points when the light engine arrived and ran into it. Whether I am altogether correct or not in the above explanation of the occurrence, the fact remains that driver Gleed with a light engine, and in the face of an ascending gradient (of 1 in 105 for 545 yards, and of 1 in 2,786 for 261 yards), failed to stop his engine at the home-signal, and his failure can only be attributed to incompetence or carelessness. As he has 40 years total service, and has been 25 years a driver, he can hardly be regarded as incompetent, and I am therefore compelled to attribute the collision to carelessness on his part for which no adequate excuse is forthcoming. He had been on duty 4 hours and 40 minutes at the time of the occurrence.

This collision compels me to draw attention to the unsatisfactory nature of the rules in force for block-working at this junction.

According to these rules the signalman at Hatton is authorised to give "Line clear" to Budbrook station for a following train as soon as the preceding train has passed the clearing point, or in the exact words of the instructions, "When the line is clear to the clearing point." The clearing point on the down main line is the home-signal, so that a train may be standing with its tail just within and close up to this signal, and at the same time "Line clear" may be given to Budbrook to permit a second train to approach the same signal, the two trains under such circumstances being separated only by the thickness of the signal post. In the case under investigation the train was standing 63 yards inside the home signal. The inspecting officers have already pointed out the risk attending such a mode of working, and have expressed their opinion that it cannot be regarded as a safe system of block working, which, according to Board of Trade Requirements (No. 1), should ensure "an adequate interval of space between following trains," a condition which is certainly not fulfilled by a space of a few inches. At Hatton junction the risk is increased owing to the fact that the home-signal referred to is 89 yards from the cabin, and the signalman cannot see with absolute certainty whether a train is entirely within the signal or not, so that it is possible that the tail of a train might be outside the home-signal at the time "Line clear" was given for a succeeding train.

Moreover, there is at certain times so much shunting of engines and passenger trains at this junction that under the rules referred to, a single act of carelessness on the part of a driver, as in the present case, is likely to cause a collision.

I have, &c.,

H. A. YORKE,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

Printed copies of the above Report were sent to the Company on the 6th January.

HULL, BARNSLEY, AND WEST RIDING RAILWAY.

Railway Department, Board of Trade,
8, Richmond Terrace, Whitehall, London, S.W.,
16th June, 1892.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in your Minute of the 2nd instant, the result of my enquiry into the collision between two goods engines, that occurred on the 27th May at Springhead near Hull, on the Hull and Barnsley Railway.

At about 1.5 a.m. on the morning in question, a goods engine, No. 23, which a short time before had arrived at Neptune Street goods yard with a down goods train, was sent away "light" from the latter place to the locomotive shed at Springhead, which is about 2½ miles distant. It was running tender in front. Through some mistake, which will be referred to later on, it was allowed to leave Neptune Street on the down line instead of the up line, that is to say it returned to Springhead over the same line, on which it had just travelled on its way from that place. On reaching Springhead, while running at 15 miles an hour, it came into collision with another goods engine, No. 26, which was standing on the down line. Behind this second engine were two coal waggons, and behind these there was a pilot engine which was about to shunt them.

Three of the servants of the Company, viz., the driver of the light engine, and the driver and fireman of the second engine were cut and bruised about head and limbs, but their injuries were not very serious.

The engines, Nos. 23 and 26, were of the same class, being both six wheel coupled, with six wheeled tenders; the former was fitted with the Westinghouse brake, while the latter had a steam brake, in both cases in addition to hand-brakes. No. 23, which was running tender first, had its tender buffer-plank and frame bent, the engine itself being uninjured.

No. 26, which was in front of the coal waggons, had its front buffer-beam and frame bent, and two buffers and one cylinder cover broken.

The pilot engine, which was behind the waggons, was forced backwards along the line, but was not injured. The two coal waggons had their spring-buffers and head-stocks broken.

The permanent way was not damaged.

Description.

The line between Springhead and Neptune Street goods yard is a goods line, and passenger trains do not run over it. At Neptune Street there are two ground frames, known as A and B, in which are concentrated the point levers for the various cross-over roads and siding connections adjacent to the frames. There are no discs or indicators at or on the points, hand-signalling alone being made use of in the yard, and the only fixed signal at this end of the yard is a semaphore arm, worked by No. 6 lever in A frame, which controls the exit from the yard on the up line. There is no communication between A and B frames, which are enclosed in small huts for the protection of the pointsmen from the weather.

The signalling of the line commences outside the goods yard at what is called Subway Cabin, and there is communication by means of gongs between this cabin and A frame. The next signal-cabin is Springbank south, 1 mile 1,170 yards distant, and here there is a junction between the lines to Hull and the lines to Springhead. The points at this junction lie normally for the lines to Springhead, which curve round to the west, and beyond the curve there is Springbank west cabin, which protects a second junction, between the lines to Neptune Street and the lines to Hull. It was at the entrance to Springhead yard, between Springbank south and west cabins, that the collision occurred. There are cross-over roads between the up and down lines at both Subway cabin and Springbank south.

The night in question is said to have been very dark with a good deal of rain and wind.

Evidence.

Thomas Overstall, driver, states: I have been in the Company's service 7 years, and goods driver all the time. I had been 13 years before that with the Great Northern Railway. On 26th May I came on duty at 1.45 p.m. at Springhead, having come off duty between 6 and 7 p.m. on the 25th. I started from Cudworth at 8.32 p.m., 47 minutes late, with a coal train for Hull. I reached Neptune street at 12.48 a.m. on 27th with 13 trucks. After reaching the yard between A and B frames, I ran round my train in order to make one shunt, and I was then detached; the guard handed me his statement, and I whistled for the signal to go away from the yard. The shunt I had to make with my train was to put the train across the up road into the sidings. I received a hand-signal to set the train back. After doing this

shunt the guard detached the engine. After whistling for a signal from B frame someone gave me one from outside the hut, but I do not know who it was. It was a white light, waved from side to side. I was 35 or 40 yards from B frame at the time I whistled. As soon as I got the signal I started away for Springhead, running tender first. The advance signal for Subway cabin was against me when I first saw it, but it was lowered before I reached it. All the other signals were off, and I was under the impression all the time that I was on the right road. After passing Springhead South junction I saw the light of another engine on the same road; it appeared to be about 10 or 12 yards off. I applied my Westinghouse-brake at once, and reversed my engine, steam being then shut off. The collision occurred immediately afterwards. I did not jump off. I was stunned and rendered unconscious, and I do not remember anything more until I was carried to the infirmary. It never came into my mind that I was on the wrong road until I saw the engine in front of me. I was then going at about 15 miles an hour and the speed was not much reduced before the collision occurred. It was a very dark night and raining in torrents and blowing too. I saw the signals distinctly and was keeping a sharp look out. I have worked this train several times before, and I have always received a similar signal from the man at B frame, when I am to go away. My engine was No. 23, six wheel coupled engine with six wheeled tender, and fitted with the Westinghouse brake. On arrival at Neptune street I changed the head-light on the engine into a tail light, that is to say, I changed the glass from white to red. My fireman then lighted a fresh light and put in on to the tender as a head-light. Before starting away my fireman got down and had another look at the head-light. It was on the right-hand buffer, as we were running. I always shut off steam before going round the curve at Springhead South junction and whistle to warn the shunters. I did so on this occasion. I am quite certain I whistled before leaving Neptune street.

Harry Welthalle, fireman, states: I have been in the Company's service about six years, and I have been firing nearly five years. I have been firing for driver Overstall for about six months. On 26th May my hours of duty were the same as my driver's. I corroborate my driver in nearly every particular, but I looked at the head-light which was on the tender after running round the train and before setting back into the yard, and not, as he says, before starting away to Springhead. I am quite sure my driver whistled for the signal before leaving Neptune Street.

Robert Harrison, pointsman, states: I have been with the Company nearly seven years, and all the time pointsman at Neptune Street. On the 26th May I came on duty at 6 p.m. for a 12 hours' spell. I remember the (No. 70) train arriving at 12.48 a.m. on the morning of the 27th. I am in charge of B frame, and I set the road for the engine to run round his train, and then the guard told me to pull over No. 3 points to allow the train to go into the sidings. I pulled over the points but I did not give any signal to set back. It is the guard's duty to do that. After the train had set back I did not put No. 3 (point) lever back in its proper position, as I did not know the engine was clear of the points. The points are 72 yards from the frame. I did not see the engine pass the frame. My door was closed, but I do not remember exactly what I was doing. I did not hear the driver whistle, and I did not give the driver any signal to go away. I did not see any one outside my hut who could have given a signal. I did not hear or see the engine go away. I thought the driver was a long time before he whistled for a signal to go away, and I went outside, and I then found he had gone. I then went back into the cabin and reversed No. 3 lever. There is a telephone in my cabin to Springbank West, but not knowing that the engine had gone right away I did not telephone to Springbank. Shortly after returning to my hut I heard on the telephone a collision had occurred at Springbank. Sometimes the engines leave Neptune Street without any signal from me. I do not know how they find out whether points are right for them. It was raining in torrents that night.

William Conland, goods guard, states: I have been in the Company's service about three years, and brakesman and guard for about 18 months. On 26th May I came on duty at 2.15 p.m., at Alexandra Dock, to join the 2.45 p.m. train from that place for Cudworth. I left Cudworth at 8.32 p.m. for Hull, and arrived at Neptune Street at 12.48 a.m, which was about 1½ hours late. On arrival at Neptune Street, I uncoupled the engine for it to run round the train. The fireman was then lighting the lamp, and he asked me if I thought it would burn, and I said it was a bad light. I went to the pointsman and told him to let the engine run round the train, which he did. The engine ran round the train, and the pointsman then pulled the points for the middle of the yard. I then signalled the train back, and put the first three waggons in No. 7 road, and the rest of the train in No. 8. I detached my engine, and told the fireman I had finished with them. When I detached the engine it was in No. 8 road, and was about 35 yards past B frame. I did not hear the driver whistle for a signal. As soon as I gave him his ticket he started away. It did not strike me that the road was not right for him. It is the pointsman's duty to see to this, as the train had finished its work. There was no one in the yard but myself. On the arrival of the train I saw both the foreman and numbertaker, and, after speaking to me, they went into their cabin. It was raining hard and very dark.

William Clarkson, driver, states: I have been with the Company for seven years, and driver all the time. On 26th May I came on duty at 3.55 p.m., and I took a train to Cudworth and back, and reached Springbank west on the return journey at 12.55 a.m. on 27th. We had made a few shunts, and were standing on the down line with two coal trucks behind, when I saw an engine coming round the curve by Springbank south cabin. I did not know it was on the wrong road. My fireman was just going to get on to the tender to put the tools away, when I warned him not to do so because a pilot engine was coming up behind to take off the two waggons. That is the last I remember. I heard the engine whistle as he came round the curve. I saw his head-light. If he had not had a light I should not have seen him at all, as it was dark. I was a good deal hurt about the head.

W. Coupeland, fireman, corroborates his driver in every particular. He was bruised about the hips, and knee, and shoulder, but not rendered unconscious.

George Paddison, pointsman, states: I have been with the Company three years; and about 18 months pointsman. I came on duty on the 26th May at 6 p.m. for a 12-hour spell. I am stationed at A frame at Neptune Street. I remember No. 70 train coming in on the night of the 26th May, and the engine running round the train. I heard a whisle, and thinking it was for the engine to go away to Springhead, I pulled off my signal No. 6, and gave the gong to Subway signal cabin. When the engine passed my cabin, I ran out to give him a red light, because he had not got a head-light, but before I got outside he was past my cabin. I saw the tail-light, and I thought the engine was on the wrong road. I then gave four beats on the gong to Subway cabin, and then ran to the signal-cabin myself to tell the signalman there that I thought the engine was on the wrong road. The signalman then telegraphed to Springbank south, but received a reply "Right road."

Arthur Camm, signalman, in Subway cabin, states: I was looking out for the engine, but could not see it, because it was a very dark night; and I am quite certain that it had no head-lights. The first I knew of the engine passing the cabin was hearing it. I

saw the tail-light. I did not notice that it was on the wrong road. I at once called up Springbank south to say "No head light." I received clear from Springbank south at 1.9, and at 1.10 pointsman Paddison came to my box to say he thought the engine was on the wrong line. I at once asked Springbank south about it, and he replied "Right road."

William Henry Shaw, signalman in Springbank south, states: I was looking out for the engine to pass my box, in order to give him a hand-signal to say that his head-lamp was out. I did not see the engine till he was close up to the box, but it was too late then to give him this hand-signal, and I then gave "On line" to Springbank west, and told him that the engine had no head-light. I did not know he was on the wrong road.

W. Cowling, shunter, states: On the morning of 27th May, I was standing alongside of the tender-buffers of engine No. 26 in Springbank west. I was on the 6-ft. side. I saw engine No. 23 approaching round the curve, and I thought it was on the right road. I saw the head-light of the engine, otherwise I should not have seen it all. It was not a bad light. When No. 23 was close up to No. 26, I saw the former was on the wrong road, and I had just time to get away when the collision occurred.

Conclusion.

The main facts of the case appear to be as follows:—A down goods train, consisting of No. 23 goods engine, tender, and 13 waggons arrived at Neptune Street goods yard at about 12.48 a.m. on the morning of the 27th May, being 1½ hours late. It came to a stand in the yard on the down line between A and B frames. The engine was then uncoupled by the guard, ran round the train (through No. 5 cross-over road B frame, and No. 4 cross-over road A frame), and was reattached to the tail of the train so as to back it into the sidings. Before this was done the fireman attached a white light to the tender, to serve as a head-light, the original head-light on the engine being changed from white to red, to serve as a tail-light. The engine backed the train through No. 3 (B frame) facing-points on to the up line and thence into No. 7 and 8 sidings, part of the train being left in one road part in the other. When this was completed, the goods guard came up to the engine, which was then in No. 8 road, uncoupled it from the train, and handing to the driver his statement, told him and the fireman that he had done with them, and that they could go home. The driver having, as he says, whistled for and received from the pointsman in B frame a signal to go away, started off to the locomotive shed at Springhead. But No. 3 facing-point lever had not been replaced by pointsman Harrison in its normal position after the train had been shunted from the down to the up line, and the consequence was that, the points still being set for the cross-over road, the engine retraced its path and went back to the down road, instead of going straight out of the yard on the proper up line.

At A frame, Subway cabin, and Springbank south cabin, the signals were pulled "off" for the engine to pass, and the driver, not having noticed that he was on the wrong road, ran on at a fair rate of speed until he was approaching Springbank west, when he saw another engine (No. 26) on the line in front of him, and about 10 or 12 yards off. He then for the first time realised that he was on the wrong line, and at once applied the Westinghouse brake, and reversed his engine, but the collision occurred immediately afterwards.

There is a direct conflict of evidence between driver Overstall and pointsman Harrison as to what happened when the engine started from Neptune Street. The driver asserts that before starting he whistled for a signal from the pointsman at B frame, and that he received the usual "Right away" signal, viz. a white light waved from side to side, which would mean that the points were right for the up line, and that the engine might go away. He is confirmed in this statement by his fireman, but such corroboration does not carry much weight.

On the other hand, pointsman Harrison is positive that he heard no whistle and gave no hand-signal whatever to the driver; and the evidence of guard Conland to a certain extent supports this, inasmuch as he says that he heard no whistle, and that the driver started away as soon as he received the intimation from Conland that work was finished for the night. Harrison admits that he did not restore No. 3 lever to its normal position after the train had been backed across the up road into the sidings, but he was not consistent in the reasons he gave for the omission. In his report to the Company, written the day after the collision, he said that he "forgot" to replace the lever in its normal position. In his statement to me he said that he did not move the lever, because he did not know that the train had cleared the points after setting back into the sidings.

It is not possible to decide between the conflicting statements of the driver and pointsman, although the evidence of the latter would seem to be weakened by the inconsistency just referred to. In any case, driver Overstall showed a want of care and observation. Had he been on the alert, he could hardly, even on a dark night, have run through facing-points, over an iron bridge with high girders on each side, and past two signal-cabins and several signal-posts, without discovering that he

was on the wrong line. I can only assume that as he was running tender first, and that as he had no "cab" to shelter him from the driving rain, he muffled up his head and ears, and, thinking he had a clear road, hurried home with his back turned to the storm.

The rest followed as a matter of course. There was no one about the yard to notice that the engine had started away on the wrong line. It was signalled from cabin to cabin in the proper manner, and had nearly reached Springhead when it ran into the second engine. Neither of the signalmen at Subway cabin or Springbank south noticed that it was on the wrong line as it passed them, but the pointsman at A frame seems to have had some misgivings on the subject, and communicated them to the signalman at Subway cabin, who however, after telegraphing to Springbank south, assured him he was mistaken.

I am of opinion that the responsibility for the collision must rest between driver Overstall and pointsman Harrison. In the face of the conflict of evidence already discussed, it is impossible to say which of the two men is most to blame, but it is certain that if they had both performed their duty with care and vigilance, the collision would not have occurred. The driver had been on duty for 11 hours and 20 minutes, and the pointsman for 7 hours at the time of the collision.

There is another point on which, according to the evidence, considerable doubt exists, and that is whether the engine and tender had a head-light burning on the way home. The signalmen say that they saw no head-light when the engine passed; whereas the driver and fireman of the engine which was run into, and a shunter who was standing by this engine, agree in stating that No. 23 engine had a head-light, and they were thereby made aware of its approach.

It seems tolerably certain that the fireman placed a head-light on the tender before it ran round the train in Neptune Street goods yard. But it was burning badly, and the fireman got down a second time before starting home to prick it up, and it is said then to have given a good light. On the whole I am inclined to believe that the head-light was burning, though perhaps not brightly, at the time of the collision.

Pointsman Harrison, in excusing himself for not having seen the engine go past his cabin on its way home, stated that drivers are in the habit of leaving the yard without whistling, and without waiting for a signal from B frame. If this is the case it was his duty to have reported it whenever it happened. His neglect to do so, and the occurrences of the night in question, would seem to indicate that some laxity exists in the working of the Neptune Street goods yard.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

H. A. Yorke,
Major, R.E.

Printed copies of the above Report were sent to the Company on the 28th June.

LANCASHIRE AND YORKSHIRE RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
September 5, 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with your Order of the 15th August, the result of my enquiry into the collision that occurred on the 11th August, at Sandhills station, on the Lancashire and Yorkshire Railway.

On the occasion in question, while the 8.10 p.m. slow train from Wigan was standing at the platform at Sandhills station, where it had arrived at the proper time, it was run into in rear by the 8.10 p.m. express from Preston to Liverpool, which was 10 minutes late.

Sixteen passengers are reported to have complained of injury, but none of the cases appear to have been serious. The guard of the Wigan train was much bruised and shaken. His escape is remarkable, for the van in which he was standing was smashed to pieces.

The Wigan train consisted of engine (No. 1055), tender, and seven vehicles, including two vans which were both at the tail of the train. The engine was a six wheel coupled goods engine, running chimney in front, and both it and the train were fitted with the automatic vacuum-brake besides the usual hand-brakes.

The Preston train consisted of engine (No. 456), tender and five vehicles, including one van, which was next to the engine. The engine had four wheels coupled and was running chimney in front, and in this case also the engine and the train were fitted throughout with the automatic vacuum-brake and hand-brakes.

Both trains were damaged, but the Wigan train naturally suffered the most. Of this the two vans, which as already stated were at the tail of the train, were entirely smashed, and four of the other vehicles had their ends broken in, but one carriage, which was in the middle of the train, did not sustain much injury.

The engine of the Preston train, which was embedded in the débris of the vans in front, had its buffer beam broken, smoke-box crushed in, and frame bent, while nearly all the buffers throughout this train were either bent or broken, and the axles of the two last vehicles were bent. It is worthy of remark that the van, which was next the engine, received no damage whatever, while the last vehicles in the train suffered the most.

The up line was fouled by the débris of the trains, but the permanent-way was not in any way injured.

For details of the damage to the rolling-stock, see Appendix.

Description.

There are four lines of rails running through Sandhills station, viz., two up and two down, and there are four platforms, two of which form an "island" between the two pairs of rails.

Two of these lines branch off at the east end of the station to Southport, and need not be further considered. The other two lines which run to Manchester diverge outside the station into five roads, viz., up and down fast main lines, up and down slow, and a down goods loop, the junctions for these lines being situated opposite to No. 2 signal-cabin. These five roads extend as far as Kirkdale, which is the next station to Sandhills in an easterly direction, and here they converge again into two, viz., up and down mains. There are various connections at Sandhills between these lines and the Southport lines already mentioned.

On the east side of Sandhills there are three signal-cabins known as No. 1, No. 2, and No. 3. No. 1 is situated near the end of the down main platform; No. 2 is about 200 yards outside No. 1, and No. 3 is about 350 yards outside No. 2.

The down main signals worked from No. 1 cabin consist of a starting-signal situated at the west (or Liverpool) end of the station for each down line, and a group of home-signals about 30 yards outside the cabin. There are no distant-signals for this cabin, their places being taken by "slots," which control the home-signals of No. 2 cabin. These "slots," which are worked by independent levers, are released by the home-signals of No. 1, the effect of this arrangement being that the home-signals of No. 1 must be lowered before the home-signals of No. 2.

The down main signals worked from No. 2 cabin consist of groups of four home and three distant signals, the latter being fixed on the same posts as, and controlled by, the home-signals for No. 3 cabin, which again has home and distant signals, the latter being fixed on the same posts as, and controlled by, the starting signals at Kirkdale station.

A driver leaving Kirkdale for Sandhills on either the fast or slow down line, has therefore the following signals in front of him:—(1) the starting-signal from Kirkdale with distant of No. 3 cabin below it; (2) the home-signal of No. 3, with distant-signal of No. 2 below it; (3) the home-signal of No. 2; (4) the home-signal of No. 1; (5) the starting-signal of No. 1, and he would know that if No. 2 home-signal was lowered, No. 1 home-signal must necessarily be lowered also, as already explained. He would also be justified in assuming that, if these two home-signals were lowered, the section ahead of Sandhills was clear as far as the next block post at Exchange junction.

The following distances should be noted:—

From No. 1 cabin to the down		starting-signal	- - -	290 yards.
„	„	„	home-signal - - -	30 „
„	„	„	home-signal of No. 2 - -	294 „
„	„	„	distant-signal of No. 2 - -	592 „

The collision occurred near the east end of the down platform, about 200 yards inside the home-signals.

There is a bad view from No. 1 signal-cabin of the down main starting-signal, and of a train standing in the station, and for this reason the Company had provided electric indicators in the cabin to inform the signalman when a train had passed into and out of the station. These indicators are worked by means of treadles below the rails, and the first or "in" treadle is fixed near the outer end of the down platform, while the second or "out" treadle is fixed 70 yards in front of the starting-signal. When a train enters the station and passes over the first treadle, the needle of the indicator in the cabin at once shows "Train in," and as the train passes over the

second treadle the needle flies to "Train out." The signalman has in this way information whether a train has left the station or not.

The line is worked on the absolute block system between all the signal cabins referred to in this report, and the following are the Company's rules for the use of the fixed signals in connection with block working:—

"No. 26. All fixed signals must be kept at 'Danger' until the 'Be ready' signal has been accepted by the signalman at the next box in advance, and until the line on which the train or engine requires to travel is clear. Except in the cases referred to in clauses 17, 19, and 20, the starting and advance signals must not be lowered until the block-signals have been given and received as directed."

"No. 28. Where starting or advance signals are provided, so long as they are at 'Danger,' the home and distant signals must also be kept at 'Danger,' except on the near approach of a train which has to stop at a station, when after the speed of the train has been reduced so as to admit of its stoppage at the platform the home-signal may be lowered to admit the train; if a non-stopping train is waiting for the section in advance to be cleared, the signalman, having brought the train to a stand at the home-signal, must lower it to allow the train to draw towards the starting or advance signal."

From Kirkdale to Sandhills there is a falling gradient varying from 1 in 400 to 1 in 240.

Evidence.

Michael Bevan, signalman on duty at Sandhills No. 2 box, stated: I have been in the service of the Lancashire and Yorkshire Railway Company for 14 years. I have been a signalman 10½ years and five years of that time at Sandhills No. 2 box. I came on duty on August 11th at 2 p.m. for an eight hours' turn, having left duty the previous day at 10 p.m. The train from Wigan was offered to me on the block instruments at 8.50 p.m., and I accepted it at that time. It passed my box at 8.55 p.m. and I had it cleared from No. 1 at 8.56 p.m. All the signals, including the distants, were off for this train. The express train from Preston was offered to me at 8.53 p.m., I accepted it at 8.55, and offered it to No. 1 box at the same time. It was accepted by No. 1 box at 8.56. It did not strike me that it was at all curious No. 1 box accepted the Preston train so soon after the Wigan train had passed me. I pulled over my home-signal lever (No. 87) as soon as the Preston train was accepted at 8.56. At this time the train was outside my distant-signal. When the train was drawing nearly to a stand at my home-signal, I communicated with No. 1 box, and the signalman there took off his slot on my home-signal; the signal-arm was lowered and the train passed my box at 8.58. I was not aware that anything wrong had happened, and the first I heard of the accident was about 9.30 p.m. I did not communicate with No. 1 box by means of the telephone, but by means of the loop line bell which is provided for shunting operations. When the Wigan train passed my box I saw a tail-lamp upon it, but I did not see any side-lamps. The Preston train passed me at a speed of about eight miles per hour. The driver had steam on. I understood by the slot being taken off my home-signal that the line was clear to No. 1 box starting-signal. The Preston train carried both side and tail lamps.

John Alker, signalman on duty at Sandhills No. 1 box, stated: I have been in the service of the Lancashire and Yorkshire Railway Company 32 yerrs, I have been a signalman 26 years, and 3½ years at Sandhills No. 1 box. I came on duty on August 11 at 2 p.m. for an eight hours' turn, having left duty the previous day at 10 p.m. The Wigan train was offered to me at 8.49 p.m., I accepted it, and offered and got it accepted by the box in advance at the same time. I got the "Train on line" at 8.54, and it arrived at 8.55. It is booked as having departed at 8.56. I have a booking boy in the box and he books the trains from his own knowledge of the bell-signals, but I am responsible for the entries in the book. I have an electric indicator which shows "Train in" and "Train out" of the station. The treadle which moves the indicator to "Train in" is fixed at the entrance to the platform, and the treadle which moves the indicator to "Train out" is fixed 221 feet in advance of the starting-signal. When the train arrived I noticed the indicator and it showed "Train in." When the Wigan train had passed my box I put the home-signal and slot to danger behind it. After the Wigan train had come in the Preston express was offered to me at 8.56, and I accepted it at 8.56 receiving "Train on line" signal at the same time. When I accepted the Preston train I was under the impression that the Wigan train had passed forward into the next section. I looked towards the platform and could not see the Wigan train. I cannot possibly say whether I looked at the electric indicator or not before I pulled off the signals for the Preston train. I had previously put the starting-signal to danger but I cannot say when. I had pulled the starting-signal off when I pulled the home-signal for the Wigan train to arrive. After accepting the Preston train at 8.56 I pulled off the home-signal for it, but I did not pull off the starting-signal. There are two levers in connection with the home-signal, one to work the slot and the other to work the home-signal, but the home-signal precedes the slot. The signalman at No. 2 box had given me a ring on the goods loop bell because I had not pulled off the slot. The practice of ringing the goods loop bell has been in existence ever since I have been at No. 1 box. I did not hear any whistling from the Wigan train, even if the driver had whistled I should not have noticed it because there is so much whistling going on in the Cheshire lines yard. The only reason I can give for allowing the Preston train to approach is that I was confident in my own mind that the Wigan train had passed forward into the section in advance. I am quite certain that I looked to see whether it was in the station before I accepted the express and I saw nothing. I looked for myself. I did not ask the train-booker to look whether the train had gone out of the station. It was dark at the time but the atmosphere was not thicker than usual. I knew that the Preston train did not stop at the station to collect tickets. The Wigan train was up to time but the Preston train was about 10 minutes late. The Wigan train had only a tail-light on, I did not see any side-lights, and did not call the attention of the signalman at the box in advance to the absence of side-lights. The Preston train passed my box at about 10 miles per hour with the steam shut off. There was no one in the signal-box except myself and the train booker. Absolute block is marked between Nos. 1 and 2 boxes. I had accepted a train from Liverpool at 8.55 and directly I got notice of the collision I threw all my signals on and stopped it.

Michael Clarke, train booker in No. 1 Box, Sandhills, stated: I am 16 years of age, and have been a train booker for 12 months. I know No. 1 box very well and understand the bell code. I have been at this box for 10 months. I came on duty at 6.0 p.m. on August 11th for 12 hours, having left duty at 6.0 a.m. I saw the Wigan train pass about 8.55 p.m. I think there was a van at the end, and think there were two lights on it. I think there was in addition to the tail lamp a smaller light on the far side. I booked the departure of the Wigan train at 8.56, because the signalman cleared it on the block instrument and accepted the Preston train. I saw the Preston train run in, I was looking towards the station, but I did not then see the tail light on the Wigan train standing there. I heard a noise and thought it was in the Cheshire lines yard below, and just at that time Exchange junction telephoned up to know where the Wigan train was, as it had not passed there. I replied that the train had left, because I thought it had done so, but the collision had occurred just before that and I did not know of it. The next I knew of anything being wrong was about 9.2, when ticket collector Hurst came up to the box and told us there had been a collision, and requested me to telephone for the hospital ambulance at once. I telephoned to Liverpool and also informed Exchange junction and No. 2 that there had been a collision. When booking trains I stand with my back to the signal-levers, and cannot say which signals the signalman put to danger behind the Wigan train. The Preston train was offered to Exchange junction at the time it was offered to No. 1, and it was offered a second time when the train was passing No. 1 box at 8.58. I booked it in mistake as having been accepted by Exchange junction at the same time. I afterwards cancelled the entry.

Thomas Looney, engine-driver, with engine No. 1055, working 8.10 p.m. passenger train, Wigan to Liverpool, August 11th, stated: I have been in the service of the Lancashire and Yorkshire Railway Company 22 years, and have been an engine-driver nine years. I left duty at 12.50 a.m. and came on duty at 2.5 p.m. on August 11th. I signed off again at 1.10 a.m. on 12th, which was later than usual, being detained at Liverpool in consequence of the accident. My usual time for finishing is 12.50 a.m. I worked the 8.10 p.m. train from Wigan and was running to time. On approaching Sandhills No. 2 box and Sandhills No. 1 box all the signals were off, including the starting-signal for No. 1. I was driving a six-wheeled coupled goods engine, running engine first, fitted with automatic vacuum-brake coupled up to the whole of the train. The indicator registered 21 inches of vacuum on the journey. I cannot speak as to the side lamps or tail lamp being lighted or not. The starting-signal was off when we came into the station. As soon as we had come to a stand I turned to look along the platform (as I usually do) to see that my train was right, and when I looked up again the starting-signal was on. This would be about a quarter of a minute after arrival. After the tickets had been collected, I got a signal from the guard to start. This would be about a minute after arrival at the station. I whistled for the signal to be taken off. One of the ticket collectors told me to whistle again, and I did so. My brakes were off, and someone shouted to me to go away as quickly as possible, and I was just giving the engine steam when the train was struck by the Preston train. We went forward about three carriage lengths after being struck. I think we had been standing about two minutes altogether when the collision happened. The collision knocked my mate off the engine. I was not knocked off and was not hurt. The engine was driven forward three carriage lengths.

Arthur Wood, fireman to engine-driver Looney, stated: I have been a booked fireman about six months. When we left Wigan I could not say whether there were any side lights on the train. We stopped at all stations from Wigan, and it did not occur to me to see or to speak to anyone as to whether there were any side lights on the train.

Frank Payne, summer guard, stationed at Liverpool, stated: I was guard of the 8.10 p.m. passenger train from Wigan to Liverpool on August 11th. When not employed as guard I am employed as a ticket collector. I came on duty at 10.30 a.m., having been off duty since 12 midnight on the previous day, and should have left duty at midnight on August 11th but for the accident occurring. The train stops at all stations, and was running to time. It was composed of three third-class carriages, two composite carriages and two vans, both vans in the rear. The train was fitted with automatic vacuum-brake throughout. I had a tail lamp on, but I do not know whether there were side lights on the van or not. It is the guard's duty to see that side lights are attached, but I cannot say I did so on this occasion. I was riding in the second vehicle from the end. There were about 30 passengers in the train when it arrived at Sandhills. There were two passengers in the third-class compartment of the composite carriage which was next but one to my van, furthest away from me, but no one was in the composite next to my van. I got out of my van on arrival at the platform at Sandhills. I had not noticed the signals on coming in, but I saw the starting-signal was on when I got out of my van. I think the train was at the platform about two minutes. The tickets had been collected, and I got a signal to start. I gave my driver a signal. My driver whistled twice loudly for the starting-signal to be taken off, and immediately after the second whistle I got into my van, and directly after that the Preston train ran into us. I was knocked by the collision to the foot of the elevation in my van, and was much bruised and contused. I am still on the sick list. My van was smashed to pieces.

John Collinson, engine-driver, with engine No. 456, working the 8.10 p.m. passenger train, Preston to Liverpool, stated: I have been 25 years in the service of the Lancashire and Yorkshire Railway Company. I have been a driver for 11 years, and a passenger driver for three years. I came on duty at 12.45 p.m. on August 11, having left duty at 7.20 p.m. the previous day. I should have signed off again at 12.0 midnight if I had been working in the ordinary course. My engine (No. 456) was a four-wheeled coupled tender engine with single leading wheels, fitted with automatic vacuum-brake, the brake was connected throughout the train. The indicator registered 20 inches of vacuum. The brake was tested at Preston and used for stopping at Burscough junction and Ormskirk. It worked all right. I was six minutes late from Preston, and lost one minute up to Kirkdale by the distant-signal from Kirkdale east box being on. I lost another minute by the signals worked from Sandhills, No. 3 and No. 2 boxes being against me. The distant-signal for Sandhills No. 3 box was at danger when I sighted it, but the home-signal for No. 3 was off when I sighted it. The distant-signal for No. 2 (which is below the home-signal for No. 3) came off as I approached it. The home-signal for No. 2 was off when I saw it. I had reduced speed to about 10 or 12 miles per hour on approaching Kirkdale, but when I saw the distant-signal for No. 2, and the home-signals for Nos. 2 and 1 off, I concluded that I had a clear run to Exchange junction. I put steam on again and came up to No. 1 box at a speed of between 30 and 40 miles per hour. On passing No. 1 box I saw the starting-signal on, and I shut off steam at once and applied the brake. After putting on the brake I saw a train in front of me, but no tail or side lights. I could not do any more to stop my train. The collision took place

before I could reverse. The speed before striking the train in front was reduced by five or six miles per hour, and I think I should strike the standing train at a speed of 30 miles per hour. The front of my engine was embedded in the rear of the Wigan train. I was badly shaken and am still on the sick list. My fireman was also hurt.

John Winrow, fireman to driver Collinson, stated: I have been 11 years in service, a registered fireman for three years, and have fired for Collinson 2½ years, on and off. My hours of duty were the same as Collinson's. I have heard Collinson's statement read, and corroborate it. The driver saw the starting-signal at danger before I did, and when he applied the brake I opened the sanders. I saw the train standing at the platform, but saw no lights upon it. I was badly shaken by the collision, and am now on the sick list.

James Mayoh, passenger guard in charge of the 8.10 p.m. train from Preston to Liverpool, August 11, stated: I have been in the Lancashire and Yorkshire Railway Company's service 35 years, and have been a guard 25 years. On the date of the accident I signed on duty at 2 p.m., having come off duty the previous day at 12 midnight, and I finished on the 11th instant at midnight. All the home-signals were off for my train up to Sandhills No. 1 box, but the distant-signals for Kirkdale east box and Sandhills No. 3 were on. I saw the starting-signal for No. 1 was on, and it was in consequence of this signal being on that the train slackened. I was looking out at the left-hand side projection when I saw the starting-signal. I was then passing No. 1 box. I got up on to the elevation and began to put on the brake with a view to assisting the driver, and directly after the collision occurred. I did not see the train we ran into, nor did I see any side or tail lamps. I was thrown against the brake wheel and had my thigh injured. There was no damage done to my van. There would be about 30 passengers in my train. Only one passenger (in my train) was injured. This was a lady who had a cut over her eye. My train consisted of engine, van, first-class carriage, second-class carriage, two third-class carriages, in the order shown. I was in the van next to the engine. The train was fitted with the automatic vacuum-brake throughout. It was tested at Preston and was in perfect order. The only damage to my train consisted in a buffer of the second-class coach breaking the end of the carriage next behind it.

John George Winch, ticket collector at Sandhills station, stated: I have been in the service of the Lancashire and Yorkshire Railway Company 13 years, and two years as ticket collector at Sandhills. I was in charge of the station when the Wigan train arrived. I cannot say whether the starting-signal was on or off when the train arrived. After the tickets had been collected I gave the guard a signal to start his train, and as the train did not start I looked up at the starting-signal and saw that it was on. I observed that the home-signal was off, and I sent collector Hurst to tell the driver to whistle, and I went towards the signal-box to tell the signalman that the home-signal was off, and as I was going along the platform I saw the express coming in. I then ran back towards the engine of the Wigan train and shouted to him to go on. I cannot say whether he got his train in motion before it was struck. I do not know whether any passengers had time to get out of the Wigan train before it was struck. Several passengers complained to me of injury.

Conclusion.

The circumstances under which this very serious collision occurred appear from the evidence to be as follows: the 8.10 p.m. train from Wigan to Liverpool had arrived, and stopped at Sandhills at the proper time, 8.55 p.m. Before its arrival all the signals at Sandhills No. 1 cabin, including the starting-signal, had been lowered for it, and the train had been offered to and accepted by the cabin in advance, viz., the Exchange junction cabin. As soon as the train had passed No. 1 signal-cabin, the signalman put the home-signal to danger behind it, at the same time slotting the home-signal of No. 2, but the starting-signal should have remained "off" until the train had left the station and entered the next section in advance. After the tickets had been collected at the platform and the station work finished, the guard gave his driver the usual signal to start, but the latter on looking at the starting-signal, which had previously been lowered, found it at danger. He therefore remained stationary, and whistled to attract the signalman's attention so that the latter might lower the signal, which, however, he failed to do. The signalman states that he is quite unable to say when it was that he placed the starting-signal at danger, but he does not deny, and there is no doubt whatever, that he did so place it before the Wigan train had left the station.

At, 8.55, just after the arrival of this train, the "Be ready" for the Preston express, which was a few minutes late, was offered by No. 2 box to No. 1. The latter did not immediately accept it, but at 8.56 he did so, being, as he says, under the impression that the Wigan train had gone forward, and the signalman in No. 2 then pulled off his home and distant signals, the train being at that time just outside the latter. The signalman in No. 2 cabin, however, found that his home-signal did not fall when he pulled over his lever for it, the reason being that the "slot" from No. 1 box had not been taken off, and the Preston train therefore began to slacken speed preparatory to stopping at No. 2's home-signal. No. 2 signalman thereupon communicated with No. 1 (in a manner not authorised by the rules, but which the signalmen seem to have adopted among themselves), and let him know that the express was being stopped. No. 1 signalman thereupon lowered his home-signal, and pulled off the slot from No. 2's home-signal, and the driver of the express seeing both these signals fall, and thinking he had a clear road to Liverpool, at once gave his engine steam, and when he reached No. 1 cabin he was travelling at a speed of about 35 miles an hour, the

gradient being in his favour. Immediately after passing the cabin he saw that the starting-signal was at danger, and he at once applied his continuous-brake, and as he did so he also saw the Wigan train at the platform just in front of him. Before he could do anything more, his train crashed into the Wigan train with results already detailed. Fortunately the brakes of the latter train were off, and, moreover, the train was on the point of moving forward, for ticket collector Winch had seen the express approaching and had shouted to the driver of the slow train to go ahead. This order was being obeyed when the collision occurred, and doubtless the shock was thereby reduced.

The responsibility for the collision must rest with signalman Alker, of No. 1 cabin, who put up his starting-signal before the Wigan train had left the station, and who "accepted" the Preston train, and pulled off his home-signal and his slot while the former train was still standing at the platform. He made the best amends he could for his mistake, by frankly acknowledging it, but he is unable to say when it was that he put his starting-signal to danger. He declares that before accepting the "Be ready" for the express, he looked into the station and saw nothing of the Wigan train, and he felt confident that it had gone forward, but he admits that he did not look at his indicator, which, as already explained, would have informed him that the train was still in the station.

But even supposing that it had gone forward and that he considered himself at liberty to accept the "Be ready" for the express, he was not justified by the rules in lowering his home-signal for it, until he had received "Line clear" from the box in advance at Exchange junction. And the fact that he twice offered the Preston train to the Exchange junction-cabin would seem to show that he was aware that the Wigan train had not cleared the section ahead.

There seem to be only two possible explanations of his action. Either he became flurried and forgot all about the Wigan train, when the signalman at No. 2 cabin called his attention to the fact that the express was being checked at the latter home-signal; or, thinking that the Wigan train had gone forward, he trusted to his starting-signal to protect it, and expecting every moment to receive "Line clear" from the Exchange junction cabin, he lowered his home-signal for the express, so as to avoid delay to it. Of these two alternatives, I am inclined to regard the latter as the most probable. The fact that he offered the express to Exchange junction cabin for the second time at 8.58 p.m., as it was passing his cabin, added to the fact that he did not lower his starting-signal as he should have done if he was working correctly when he lowered his home-signal, indicates that he was aware that the section ahead was not clear, and that he had not forgotten the Wigan train.

Signalman Alker who is an old servant of the railway company, and who bears a high character, had been on duty 6 hours 56 minutes at the time of the collision.

It may be remarked that if the express had been running to time it would have passed through Sandhills 10 minutes before the Wigan train, and under the circumstances it was injudicious on the part of signalman Bevan in No. 2 cabin to allow the latter train, which had travelled on the down slow line between Kirkdale and Sandhills, to get out on to the down main line just in front of the express.

His hours of duty were the same as Alkers.

The signalling arrangements between Nos. 1 and 2 cabins are somewhat unusual, inasmuch as No. 2 home-signal cannot be lowered until No. 1 home-signal has also been lowered. The effect of this is, that though the section between 1 and 2 cabins may be clear, the signalman in No. 1 cannot allow a train to enter the section while his home-signal is at danger, and he cannot in fact use his own home-signal in the manner laid down in Rule 28 quoted at the beginning of this report. But by means of his slot, he has complete control over No. 2's home-signal, which should be regarded and used as a home-signal common to the two boxes. My impression is, as already stated, that the signalman in No. 1 intended on this occasion to use his starting-signal to protect the section ahead, instead of keeping trains standing outside No. 2's home-signal. It would seem desirable that the signalling of this station should be reconsidered with the object of removing this somewhat anomalous state of affairs, and of improving the view of the station from No. 1 cabin.

Sandhills No. 1 box is supplied with a lad as train booker, whose duty it is to enter in a book kept for the purpose the time at which all block telegraph signals connected with each train are either sent or received, and also the time of the arrival, passing, or departure of each train. The information thus provided is of great value if correctly recorded, but on the occasion in question train booker Michael Clarke seems to have made his entries in a perfunctory manner, and without waiting for the proper

bell signals. For instance, he entered the Wigan train as having left Sandhills at 8.56, and "Line clear" for it as received from Exchange junction at 8.58, whereas it was still at the Sandhills platform. He entered the express as having passed Sandhills at 8.58, as having been accepted by the box in advance at the same time, and as being cleared from Exchange junction at 8.59, whereas the collision had occurred and the train never got beyond Sandhills. This mode of keeping the train book must be regarded as not only unsatisfactory, but as a source of danger, as a signalman might easily be misled by such erroneous entries. Michael Clarke is an intelligent lad and has been with the Company for one year, but his zeal seems to have outrun his discretion. He had been on duty two hours and 58 minutes at the time of the collision. A very similar case came to my notice in connection with an enquiry into a collision on another railway some months ago.

The absence of side lights at the tail of the Wigan train calls for remark. For this omission guard Payne must be held primarily to blame, but under the rules and regulations of the Company the station-masters at the starting-place and at each intermediate stopping-place are also held responsible for seeing the side lamps are lighted and in order (Rule 127.) Had the side lamps been lighted, they might have been observed by the signalman when he looked into the station, and have reminded him that the train was still at the platform.

Guard Payne had been on duty about nine hours 40 minutes at the time he left Wigan with his train; but he had been at work till midnight on the 10th August, and came on duty at 10.30 a.m. on the 11th for a day of 13½ hours, *i.e.*, till midnight, and I cannot but regard such hours as excessive, and likely to lead to a want of vigilance on the part of railway employés in the performance of their duty.

Another irregularity came to light in consequence of this collision, and that is as to the irregular and unauthorised mode adopted by the signalmen in Nos. 1 and 2 cabins, for communicating with each other. There is a definite rule that the block instruments are to be used only for block working in strict accordance with the rules. In spite of this the two signalmen, Alkers and Bevan, seem by their own admissions to have been in the habit of communicating with each other by means of the loopline bell, which is intended only for shunting operations. The custom is in this case inexcusable, as there is a telephone in existence between the two cabins. Altogether it seems that some laxity of working has been allowed to gain a footing at Sandhills, and it is to the non-observance of the strict rules for block working that this collision must be attributed.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

H. A. Yorke,
Major, R.E.

APPENDIX.

Damage done to Engine 456 of Liverpool to Preston Train.

Buffer-beam broken; smoke-box smashed in; blast-pipe broken off; steam-pipe in smoke-box damaged; framing bent; lagging-plates on boilers damaged; hand-rails bent.

Damage to Wigan Train.

Third-class carriage No. 1196.—End smashed in.
Third-class saloon No. 440.—Two ends smashed in and windows broken.
Third-class carriage No. 1799.—Slightly damaged.
Composite carriage No. 340.—End panels broken.
Composite carriage No. 168.—End and side smashed.
Brake-van No. 76.—Completely smashed.
Brake-van No. 171.—Completely smashed.

Damage to Preston Train.

Brake-van No. 217.—Not damaged.
First-class carriage No. 269.—Buffers bent.
Second-class carriage No. 387.—Buffers broken.
Third-class carriage No. 1751.—Axles and buffers bent, and end panels broken.
Third-class carriage No. 1572.—Axles and buffers bent.

Printed copies of the above Report were sent to the Company on the 7th October.

LANCASHIRE AND YORKSHIRE RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
17th January 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 14th ultimo, the result of my enquiry into the causes of the collision which occurred on the 8th ultimo at Philips Park junction, on the Ardwick branch of the Lancashire and Yorkshire Railway.

In this case a Midland Railway Company's special goods train, after standing at the Philips Park junction outer up home-signals about 55 minutes, was, just after starting, run into by the same Company's 12.12 p.m. passenger train from Marple for Victoria Station, Manchester, where it was due at 12.32 p.m.

No passengers and no servants of either of the railway companies were injured.

The passenger train consisted of an engine (running chimney in front) and tender, bogie composite brake-carriage, composite carriage and bogie third-class brake-carriage, three vehicles counting as four, fitted throughout with an automatic brake, that on the engine being applied by steam and on the vehicles by vacuum, and in it the engine and rear brake-carriage were slightly damaged.

The goods train consisted of engine and tender (running engine in front), 22 loaded waggons, and a brake-van, and in it five waggons and the brake-van were damaged, the brake-van and three waggons next in front of it being thrown off the rails.

The weather was somewhat foggy at the time of the collision, which occurred about 12.36 p.m.

Description.

At Philips Park junction there are several important siding connections, both with the up and down lines of the Ardwick branch, these connections and the various signals relating to them being worked from a commodious cabin on the west or up side of the lines. The junction up home-signals (three in number) are duplicated, the inner group being 56 yards and the outer group (for covering the connection of a through crossing from a siding to the up line) 250 yards south of the centre of the cabin; the up distant-signal is a lower arm on the up home-signal post of Sanitary Sidings cabin, which is 730 yards south of Philips Park junction cabin, absolute block system being worked between the two cabins, which are also in telephonic communication with each other. Between Sanitary Sidings cabin and Philips Park junction outer home-signals the line curves to the right (looking north) with a curve of about 25 chains radius, and there are sharp rising gradients of 1 in 70·4, 1 in 76·4, 1 in 80·3, and 1 in 93 between the two cabins.

The collision occurred about 180 yards outside the Philips Park junction outer up home-signals, on the rising gradient of 1 in 76·4.

In clear weather, and if the sidings on the down side of the line are empty, the driver of an up train might catch a view of an obstruction, standing in the position of the brake-van of the goods train when about 200 yards from it.

Evidence.

1. *Samuel Sutton*, driver; 12½ years in the Midland Railway Company's service, and a driver two years.—I commenced work on the 8th of December last at 8.50 a.m., and should have signed off at 6.50 p.m. I have been in the habit of running over the Ardwick Branch for four years off and on. On December 8th I had come from Ashton Road with a train of loaded waggons for Philips Park, having done no work on the road. My engine was a tender engine running chimney first, and my train consisted of 22 waggons and a brake-van. My fireman was William Ollier, and the guard was John Bartlett, both Ollier and Bartlett being strangers to me. I left Ashton Road at 11.20 a.m., and had no signals against me except the distant-signal and the outer home-signals for Philips Park junction. I stopped very close to the outer home-signals. After standing there 53 minutes the left-hand outer home-signal was pulled off, and although the one I wanted was the right-hand outer home-signal, I took the one that was pulled off to be for me. The right hand outer home-signal is never pulled off so far as I know. When this signal dropped I at once started and had moved forward about 25 yards when I felt the collision on the engine. The force of the collision damaged three waggons and threw them off the rails. These waggons were in the rear of the train; the brake-van was also thrown off the rails. As soon as I started, on the outer home-signal being taken off, I saw the left-hand inner home-signal off, and on seeing this I whistled (five) for the right-hand inner home-signal, the one I wanted. I gave these five whistles immediately after the collision, and before this had not whistled at all after starting. When the collision first occurred I was not aware that any waggons were off the road, and this made me whistle for the branch. I did nothing except whistle after arriving at the outer home-signal. Immediately on arrival I whistled (five), and about 10 minutes

afterwards I gave one quavering long whistle. A short time after I gave the quavering whistle my guard came up to the engine, and I then again gave one long whistle. This was the last whistle I gave, and this would be about half an hour before the collision occurred. There was no fogman at the outer home-signals when we first arrived at them, but about 10 minutes or a quarter of an hour afterwards a fog-signalman came up and sat by the fire near the signals. I had no talk with him about the detention to our train. This man remained by the fire until the collision occurred. From where I was standing I was able to see both the inner home-signals and the signal-box. I heard nothing whatever of the coming train until it struck us. The only excuse I have to offer for not sending my fireman forward to the signal-box is that I saw work going on, on the other line, which I thought was preventing my crossing into the siding, and as I could see the signal-cabin I thought the signalman was certainly able to see my train.

By *Mr. Nicholson*, Lancashire and Yorkshire Railway: I think it was about 11.40 a.m. when I came to a stand at the outer home-signals. While standing there a Midland passenger train, a Midland Carlisle goods train, and another goods train passed me on the down line.

By *Mr. Mugliston*, Midland Railway: I was able to see the signalman moving about in the box when I was standing at the outer home-signals.

By *Major-General Hutchinson*: From my engine I could see the rear of my train.

2. *William James Ollier*, spare fireman; three years in the Midland Company's service, and a spare fireman for two years.—On December 8th I was acting as Sutton's fireman, and had come on duty at 6.0 a.m. to sign off about 4.0 p.m. We were bringing a train from Ashton Road to Philips Park, and the first signal against us was the Philips Park Junction distant-signal, and the next the outer home-signals at which we stopped. Driver Sutton whistled and drew close up to the signals, but I am not sure whether he whistled five whistles or one long whistle, and about 15 minutes after the first whistle he gave a second, and this, I think, was a long one. He did not whistle again, that I remember, before the collision. Our guard came up to the engine about 15 minutes after we stopped, and he said "Do you think he (the signalman) knows we are here," and Sutton replied, "Oh, yes." A Lancashire and Yorkshire guard also came up to the engine from the direction of the box, and said they were going to the Park before we were. No conversation took place with the fog-signalman about the detention. From where we were standing at the outer home-signals I was able to see both signal-box and signalman. After we had been standing some time the left-hand outer home-signal was pulled off, and we started thinking the signal was for us, and about half a minute after starting, when we had gone about three or four waggon lengths, the collision occurred. At first I was not aware that there were any waggons off the road. I went back to see and then found that two or three waggons and the brake-van were off the rails. After I got back to the engine I told the driver that there were some waggons off the road, and he whistled four or five for the inner home-signal, intending to draw the unbroken part of the train into the sidings leaving the wreck on the line. The signal was shortly afterwards lowered, and we went away into the branch with all the waggons except those which were off the rails. I neither saw nor heard anything of the passenger train before it struck us. I remember the rule as to going to the signal-box, but on this occasion I thought it was not necessary to obey it, having heard from the Lancashire and Yorkshire guard that he was to precede us into Philips Park sidings.

3. *John Henry Bartlett*, goods guard; eight years in the service of the Midland Railway Company, and a goods guard for three years.—On the 8th of December I commenced work at 7.0 a.m., to work until about noon. I joined a special train of 22 waggons loaded with goods and coal at Ashton Road, at 11.20 a.m., to go to Philips Park. I travelled in the brake-van in the rear of the train. On arrival at Philips Park home-signals I heard some whistling, but whether it was from our engine or not I cannot say. We had a clear run from Ashton Road to Philips Park outer home-signals. After standing from 30 to 35 minutes at Philips Park home-signals, I went forward to the engine, got on to the footplate, and asked the driver whether he thought the signalman knew he was there, and the driver said, "Yes, he did." I asked him "Why?" and he said he had repeatedly whistled, and while I was on the engine he whistled again, five, the whistle for Philips Park siding signal. From the footplate I could see the signal-cabin, but not the signalman. I said nothing to the driver about sending his fireman to the cabin, although I knew it was the rule. I did not think it was my business to remind the driver of this rule. I remained on the engine about three minutes and then went back to my brake, and remained in the brake-van until I heard an engine approaching over the bridge near the end of my train I then looked out, saw the train coming, and I jumped out just before the collision. The speed of the passenger train when it hit my van was slow, not more than three miles per hour. The driver of the passenger train said he could have pulled up if he had had another carriage length to go. My train had got into motion and had gone forward a couple of waggon lengths before the collision took place. Seeing the left-hand outer home-signal off put my driver into motion. I could not see the inner home-signal. Five waggons at the rear of my train and the van were damaged. The van and the three waggons in front of it left the rails. The collision occurred at about 12.35 or 12.36 p.m. There was nothing standing on the other road or in the siding to impede the view of the driver of the passenger train.

By *Mr. Nicholson:* I do not consider I was under an obligation to go back to protect my train in accordance with Rule 213, because I was under the protection of fixed signals.

4. *Lamas Sarson*, driver; 27 years in the service of the Midland Railway Company, and a driver for 19¾ years.—On the 8th of December I commenced duty at 10.30 a.m., to sign off again at 8.30 p.m. I was driver of the 12.12 p.m. Midland passenger train from Marple for Manchester (Victoria) station, and my train consisted of engine and tender, bogie composite brake, composite carriage, and bogie third-class brake, or three vehicles equal to four. A steam-brake applied to the four coupled wheels of the eight-wheeled engine and to the six wheels of the tender, and the automatic vacuum brake was fitted to the train, both brakes being applied by the same handle on the engine. I believe we started from Marple punctually. We were slackened at Romiley junction, but not stopped, and then again at Belle Vue engine-shed box and nowhere else. On approaching the post on which is the home-signal for Sanitary Sidings box and the distant-signals for Philips Park I found both signals off. Owing to the fog I could not see the Philips Park junction outer home-signals, and the first intimation I had of anything being on the road was by receiving a red flag from the fog-signalman fogging at the Sanitary Sidings down home-signal. When I got this red flag I should be about 40 yards on the Marple side of the fogman, and at the same time that I saw the red flag I saw the train standing on the line in front. I immediately shut off steam and put the brake on with full force, and I think the brake was on at the time I was passing the fog-signalman. I think the brake took good effect. When we struck the goods train I think our speed would be about six or eight miles per hour, the speed when I shut off steam not having exceeded 25 to 30 miles per hour.

I did not notice whether the goods train was in motion or not, but I believe from what I heard that it was. After the collision I came to a stand just on the bridge. I did not see any of the Philips Park junction signals off other than the distant-signal as I passed it. The fog prevented my seeing either the outer or the inner home-signals. Nothing in my train left the rails. Neither my fireman nor I was hurt, and neither of us jumped off. I did not notice the time at which the collision occurred. I am quite sure that I got the brake on, and that the brake-blocks, so far as the engine and tender were concerned, were in good order.

5. *Henry Richardson*, fireman; 6½ years in the service of the Midland Railway Company, and a fireman for four years.—I am driver Sarson's regular fireman, and was with him on the 8th of December, my hours being the same as his. We were working the 12.12 p.m. Midland passenger train from Marple for Manchester (Victoria) station. We were either brought to a stand or slackened at Ashbury's East junction, after which we had all signals off for us. I was standing on the left-hand side of the engine, and I was not aware of anything being in our way until I saw the driver shut off steam and apply the brake sharp, and on seeing him do this I thought there was something wrong, and I opened the sand-boxes. I cannot say how far we were from the point of collision when the brake was applied. I should think our speed at the time the steam was shut off was about 20 miles per hour, and we would be travelling at a speed of about eight or nine miles per hour when we struck the other train. I neither jumped off nor was I hurt by the force of the collision. We stopped on the bridge; the goods van was buffer-locked with our engine.

6. *William Panting*, passenger guard; 12 years in the service of the Midland Railway Company, and four years a guard.—I came on duty on December 8th at 9.5 a.m., to sign off duty about 7.30 p.m. I was the only guard in charge of the 12.12. p.m. Midland passenger train from Marple for Manchester (Victoria), and it consisted of engine and tender, bogie composite break, composite carriage, and bogie third-class brake, or three vehicles equal to four. I was travelling in the brake compartment, which was at the front end of the rear carriage. We left Marple at right time, and were stopped three minutes at Marple North, three minutes at Romiley, and two minutes at Bredbury station, and were slackened at Belle Vue engine-shed. On approaching Philips Park I saw the distant-signal, and it was off. I was not aware that anything was in the way until I felt the brake go on, at which time by a rough guess I should say my part of the train was about 50 yards from the tail of the goods train. Very few seconds elapsed between the brakes going on and the collision occuring. I do not think we should be going more than 20 miles per hour when the brakes went on. We have no booked stop between Marple and Manchester. The distance is about 9 miles, and we have 20 minutes allowed to do the journey in. Twenty miles per hour is about the customary speed at this place, and it was reduced to about 10 miles per hour at the time of the collision. I felt the collision slightly, being knocked off my seat, but was not hurt. I saw nothing of the goods train before we ran into it; I could see a distance of about 70 yards. The fog was certainly thick enough to prevent our seeing more than 70 or 80 yards. There were about twelve passengers in the train, and I received no complaints of injury. There was nothing in my train off the road. After the collision I went back to the Sanitary Sidings cabin to protect my train, and I had some conversation with the signalman there. He made a remark to me that he had received "Line clear" for the goods train from Philips Park junction at 11.54 a.m., and he said he had sent the signals forward for our train, and had had them acknowledged and he called me up, into the cabin to look at the record in the train book The ink was dry, and there was no one in the cabin but the signalman, and he appeared perfectly cool. Nothing more passed. On seeing his train book a day or two after the collision, it seemed in the same state as regards these entries as they were in at the time of the collision.

7. *Henry Jones*, platelayer; eight months in the Lancashire and Yorkshire Railway Company's service.—On December 8th I began work at 5.0 a.m., and was fogging Philips Park junction outer home-signals. My duty was to keep two fog-signals on the rails so long as the signals were on, and when it came off to take one of them up. The goods train ran over two fog-signals. I did not put down any fog-signals while the goods train was standing at the signal. I did not go back to protect the goods train as it is not part of my duty to do so. I was not aware why the train was kept so long standing and made no enquiry at the cabin. When the collision occurred I was 12 yards from the signal post. The goods train at the time of the collision was just getting into motion. I saw the signal I was fogging come off, but I did not see the inner home-signals near the signal box as it was too foggy to see so far. I did not hear the driver of the goods train whistle until the signal dropped, and then he did whistle. When I saw the signal dropped I thought it was taken off for the goods train.

8. *James Harris*, labourer in the coal yard at Philips Park; 9 or 10 years in the service of the Lancashire and Yorkshire Railway Company.—On December 8th I began fogging the down home-signal at the Sanitary Sidings before breakfast. I remember the goods train arriving and standing at the Philips Park up outer home-signals, but I do not remember hearing the engine whistle while the train was standing there. After the goods train had been standing some time I heard a train approaching; on looking round, and seeing the goods train, I realised what was going to happen, and that something must be done. I ran to meet the passenger train with my red flag, and met the engine about the bridge. I think the driver saw me because he put his head out and shut off steam. He was running pretty fast. I saw that the speed was reduced before the collision occurred, and some gentlemen who got out of the carriage said he had pulled up very well. I could not see the signals at which the goods train was standing on account of the fog.

9. *William Livingston*, signalman; 39 years in the employ of the Lancashire and Yorkshire Railway Company.—I have been a signalman for 28 years, and at Sanitary Sidings box for 16 years. On December 8th I came on duty at 5.0 a.m., to remain on until 5.0 p.m. I was alone in the cabin and made the entries in the record book. I received the "Be ready" for the Midland goods train at 11.34 a.m. from Beswick junction, and "accepted" it at the same time. I passed the "Be ready" on to Phllips Park junction at 11.34, and it was "accepted" at the same time. I received the train "On line" at 11.38, and it passed at 11.39, and I gave it to Philips Park junction at 11.38, and he turned the instrument at once to "Train on line." I gave "Line clear" to Beswick junction at 11.39. On the down road a Midland passenger train passed me at 12.3, then a Midland goods train at 12.8, Beswick pilot engine at 12.22, and an M. S. & L. goods train passed me at 12.53 p.m. At 11.54 a.m. I received "Line clear" on the up line from Philips Park junction for the Midland goods train without having asked for it. The next thing I had on the up line was the Midland passenger train. I "offered" it to Philips Park at 12.31, it was "accepted" at 12.31, and I gave it "On line" at 12.35, and it was "accepted" at the same time. I gave "Line clear" to Beswick junction at 13.35 p.m. The only explanation I can give for the Philips Park signalman not having any knowledge

of the goods train is that he must have forgotten to book it. I am positive that these entries in my book are the proper entries made directly after receipt of the signals on the instrument. There was no one in my cabin when I was signalling this goods train. After the collision I saw the guard of the Midland passenger train, who came back to protect his train. I called him up to look at the entries in my book, which had all been made as the trains passed.

By *Mr. Nicholson;* Philips Park junction asked me on the telephone where the passenger train was, and I told him it had passed me four or five minutes, and he said, "Well, then, it must have run into the goods train." He did not ask me what the previous train I had sent him was.

By *Major-General Hutchinson:* I did not ask signalman Harris at Philips Park junction why he gave me clear for the goods train at 11.54.

By *Mr. Nicholson:* I have never spoken to Harris since the collision beyond saying "Good morning" to him.

10. *Lewis Harris,* signalman; 25 years in the service of the Lancashire and Yorkshire Railway Company.—I have been a signalman 10 years, and at Philips Park junction 5 years. On December 8th I came on duty at 6.0 a.m. to remain on until 2.0 p.m. I work alone in the cabin and keep my own records of passing trains. The last train I had signalled on the up line before the Midland passenger train was a Bolton coal train, for which I received "Be ready" at 11.9, "Accepted and on line" at 11.19, and it passed me at 11.27. I gave "Line clear" for it at 11.28. No other signals passed on the up line instrument until those for the Midland passenger train, which was offered to me at 12.31, and put "On line" at 12.35, the collision occurring at 12.36 or 12.37. An M. S. & L. goods train left the sidings on the down line at 11.20, and I signalled it forward to Sanitary Sidings, it was cleared to me at 11.25, then a Midland passenger train on the down line passed me at 11.59, and it was cleared at 12.3, next a Midland goods train, which I "offered" to Sanitary box at 12.3, and it was cleared to me at 12.7 p.m. After this, there was the Beswick pilot, which was "accepted" by Sanitary Sidings at 12.14, and cleared to me at 12.23 p.m. A pilot engine passed my cabin on the loop on its way to the gasworks. I should not signal this pilot to Sanitary Sidings, of this I am sure. The up Midland passenger train being so long in arriving after being signalled, I sent the man who was fogging at the inner home-signals down to see what was the cause of it. I called him to go down and see where the Midland passenger train was, as it had left Sanitary Sidings five or six minutes, and on his return he told me there had been a collision, which was the first I heard about it. I made the note in my book of 12.45 p.m. as the time of the collision from what the fog-signalman told me. While the fog-signalman was away I called signalman Livingston at Sanitary Sidings box on the telephone and asked him whether the passenger train had passed him, he replied, "Oh, yes, it has gone up." I then went to the cabin window to listen, but I could hear nothing. I then went back to the telephone and asked him what was the last train he had let come up. He said "Derby goods," and I said "Then he has gone into him; I have no Derby goods." He said "You have taken it and given me clear." He mentioned also the time at which he says I gave him clear, but I cannot just think what time he did say. I am confident I never received any signals for the goods train, and never gave clear for it. I have no idea why "Livingston" put down 11.54 as having received "Line clear" for the goods train. I could just see the outer home-signals from the cabin, but I never heard or saw any train standing there. If the Midland goods train had been signalled to me I could have sent it on at once. If anyone had come and told me it was there it could have gone straight up at once. I did not hear the goods train whistle. The proper code of whistles for the Park is three for the right-hand signal for where the goods train wanted to go. I think it was part of the fog-signalman's duty to have come and told me that the Midland goods train was standing at my signals. I have formed no theory as to what signalman Livingston was doing.

11. *Thomas Yates,* signalman; 25 years in the service of the Lancashire and Yorkshire Railway Company, 23 years a signalman, six years at Ardwick junction box.—I came on duty there on December 8th at 6.0 a.m. I have a telephone in my box on the same circuit as Philips Park and Sanitary Sidings boxes. About the time of the collision I heard Sanitary Sidings call Philips Park junction, and I took the tube up and listened. I heard Philips Park junction ask, "What was the last before the express?" the reply from Sanitary Sidings was "Derby goods," the reply back was, "He's gone into him then." This was the whole of the conversation that I heard.

Conclusion.

The primary cause of this collision was a mistake in block signalling made by one of the two signalmen, Livingston and Harris, employed in the Sanitary Sidings and Philips Park junction cabins, in consequence of which mistake the Midland passenger train was allowed to pass the Sanitary Sidings up home-signal while the Midland goods train was still standing at the Philips Park junction outer up home-signals, where it had arrived, and had been standing about 55 minutes before it was run into by the passenger train.

Livingston has all the signals in connection with the goods train properly recorded, and declares that the entries were all made immediately they were received from Harris. According to these entries, the goods train was accepted by Harris at 11.34 a.m., taken "On line" by him at 11.39 a.m., "Line clear" being received at 11.54 a.m., without its having been asked for by Livingston. The next train on the up line was the passenger train from Marple, which was accepted by Harris at 12.31 p.m., and was taken on line by him at 12.35 p.m. Harris, on the other hand, denies having received any signals at all for the Midland goods train, and declares that the down train next before the Midland passenger train, for which any signals had passed between him and Livingston, was a Bolton coal train, for which he had sent "Line clear" to Livingston at 11.28 a.m.

In other respects the train registers of both men agree, both as regards up and down trains.

It is difficult to decide as to which of these two signalmen made the mistake as regards the Midland goods train. If it was properly signalled forward by Livingston, as he declares it was, it is hard to understand why Harris should have detained it at the Philips Park outer home-signals. Harris stating that had he known it was there he could at once have allowed it to cross to the sidings where it wanted to go. A curious circumstance is the entry made by Livingston of "Line clear" for the Midland goods train at 11.54 a.m., a quarter of an hour after Harris is said to have taken it "On line." Livingston declares that he had not asked for "Line clear," but that Harris gave it spontaneously, a statement utterly denied by the latter. Then, again, in a conversation (immediately after the collision) which took place on the telephone between Harris and Livingston, and was overheard by a signalman in an adjacent cabin, this signalman confirms Harris' version of the conversation rather than Livingston's, Harris having stated that he asked Livingston what was the last train he had let come up, implying his being in ignorance about the goods train, whereas Livingston states that on Harris asking where the passenger train was, and his replying that it had passed four or five minutes, Harris said, "Well, then, it must have run into the goods train," he not having enquired what the previous train was, but, according to Livingston, then remembering the goods train. Judging from these particulars, I am inclined to believe that the mistake which led to the collision was made by Livingston, who, for some unexplained reason, allowed the goods train to pass into the section between him and Philips Park junction without giving it on to Harris, and then attempted to cover his mistake by making fictitious entries in his register.

Both Livingston and Harris are experienced signalmen of excellent character, of 28 years and 10 years' service respectively in that capacity. They had come on duty at 5 a.m. and 6 a.m. respectively, to work for 12 and 8 hours, and had therefore been on duty about $7\frac{1}{2}$ and $6\frac{1}{2}$ hours at the time of the collision.

The collision would probably have been prevented had Sutton, the driver of the goods train, complied with the rule requiring him, especially in foggy weather, to send his fireman to the signal-cabin after the detention had exceeded a few minutes. Instead of this, he contented himself with whistling when he arrived, again about 10 minutes afterwards, and once again in about 15 minutes (none of which whistles were noticed by Harris), remaining then for about half an hour without attempting to make his whereabouts known to the signalman. Sutton's excuse is that he saw trains moving about on the down line, which he thought was preventing him being allowed to cross into the sidings, and that as he was able to see the signal-cabin, the signalman could certainly see his train. Sutton's conduct is the more blameworthy as there was a fog signalman on duty at the home-signals at which he was standing, and he could well have called upon this man to go to the cabin and ask why his train was being detained. On the signal being lowered by Harris for (as he thought) the passenger train, Sutton at once started, taking the signal as intended for himself, and had moved forward a short distance when the collision occurred. Sutton has been $12\frac{1}{2}$ years in the Midland Company's service, and two years a driver. He had commenced a 10-hours' day of work at 8.50 a.m. about four hours before the collision.

Bartlett, the guard of the goods train, was in his brake-van when he heard the passenger train approaching just in time to jump out before the collision. Bartlett had gone up to the engine some time after they had arrived, and asked Sutton whether he thought the signalman knew they were waiting, and Sutton said he thought he did as he had repeatedly whistled; he said nothing to Sutton about sending to the signal-cabin, though he knew it was the rule, but says that he did not think it was his business to remind Sutton of it. He says that he could see the signal-cabin, but not the signalman, from the engine.

In my opinion, Bartlett is to blame for having failed to remind Sutton that he was not obeying an important rule. He has been in the Midland Company's service eight years, a goods guard three years, and had been on duty about $5\frac{1}{2}$ hours at the time of the collision, but for which his duty would have terminated at noon.

Sarson, the driver of the passenger train, found the up distant-signal of Philips Park junction standing "off" as he approached and passed it; he had not yet seen the outer up home signal, owing to the fog, when, shortly after passing the Sanitary Sidings signal cabin, he was shown a red flag by a fog-signalman on duty at the Sanitary Sidings down home-signal, the distance from the tail of the goods train being probably about 150 or 160 yards. On seeing the red flag, Sarsons at once shut off steam and applied his continuous brake (the fireman opening the sand-boxes), and thinks he reduced his speed from 25 or 30 miles an hour to six or eight miles an hour on collision, not, if

the data are correct, showing a good result from the action of the brake, seeing that the train was at the time ascending a gradient of 1 in 76·4.

The guard of the train felt the brake go on when he thinks that, at a rough guess, the brake compartment he was in was about 50 yards from the tail of the goods train. This can hardly be correct, as it would make the engine almost close up to the goods train when the brake went on, which is improbable, judging from the results of the collision.

No blame is, in my opinion, to be attached to the driver, fireman, or guard of the passenger train.

Though it might not have been the duty of the fog-signalman Jones, at Philips Park junction outer up home-signals, to go to the signalman and tell him of the long detention of the goods train, he would have acted with more intelligence had he done so. He had been on duty about 7½ hours at the time of the collision. He states that from where he was placed he was unable to see the inner up home-signals, distant about 200 yards.

Fog-signalman Harris, on the other hand, is to be commended for his action (not strictly part of his duty) in doing his best to warn the driver of the passenger train of the obstruction ahead of him.

This collision would probably have been prevented if the electrical locking of signals, combined with treadles or some other arrangement, had been in force between Sanitary Sidings and Philips Park junction.

It is also worthy of consideration whether, by a re-arrangement of the siding connections, the outer up home-signals at Philips Park junction could not be dispensed with. If this could be done, trains, instead of being kept standing 250 yards from the signal-cabin, could be brought within 50 yards of it.

I have, &c.,
C. S. Hutchinson,
Major-General, R.E.

Printed copies of the above Report were sent to the Lancashire and Yorkshire, and Midland Railway Companies on the 3rd February.

LANCASHIRE AND YORKSHIRE AND LONDON AND NORTH-WESTERN JOINT RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
19th August 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 29th ultimo, the result of my enquiry into the circumstances connected with the collision which occurred on the 23rd ultimo at Preston station, on the Lancashire and Yorkshire and London and North-Western Joint Railway.

In this case the London and North-Western Company's 3.30 p.m. express passenger train from Wigan for Windermere, due to arrive at Preston at 3.52 p.m. and to leave it at 4 p.m., was, while stopping at the platform, run into at the rear by the Lancashire and Yorkshire Company's 3 20 p.m. express passenger train from Manchester for Blackpool, due to arrive at Preston at 4.17 p.m. and to leave it at 4.20 p m.

Eleven passengers in the train from Wigan and two in the train from Manchester have complained of being injured.

The rear guard of the train from Manchester was injured in the head.

The train from Wigan consisted of 14 vehicles, the rear vehicle being a meat-van and the one in front of it a brake-van. The train was fitted throughout with the automatic vacuum-brake, which had been left "on" when the engine had been detached on its arrival some minutes before the collision occurred.

In this train the two rear vehicles were badly damaged, and the end compartment of the third rear vehicle was also damaged, no wheels being knocked off the rails in front of the two rear vehicles.

No damage was sustained by the train from Manchester.

The collision occurred about 4.21 p.m., the train from Wigan leaving more than 20 minutes late.

Description.

The immediate approach to Preston station from the south is controlled by signals worked from No. 1 and No. 2 signal-cabins, the latter being about the middle of the platform and the former about 350 yards south of it; a modified system of block-working is in force, it being impossible, having regard to the nature of the traffic, to work absolute block system through the station. In the present case the train from Wigan was standing with the rear vehicle 30 yards north of the advanced home-signal of No. 2 cabin, which was at danger to protect the train, and 173 yards north of the rear home-signal, which had been taken off (before it ought to have been) to allow the train from Manchester to draw up behind the other train.

The rule as to working which applies to the present case is as follows:—

"Should a train or engine be required to be sent forward into a section whilst the indicator of the block-instrument from the box in advance shows "Train on line," it must be brought to a stand at the home-signal, when, if the proper acknowledgment of the "Be ready" signal has been received, the home-signal may be lowered for the driver to proceed. A green flag or green light must be shown to the driver as he passes the box."

The lines through Preston station are practically level. The driver of the train from Manchester could have seen, had he been keeping a proper look out, the advanced signal of No. 2 cabin and the rear vehicle of the train from Wigan in ample time to avoid the collision.

Evidence.

1. *Reuben Cross*, signalman; 22 years in the North Union Company's service, signalman all the time.—I have been employed in No. 1 cabin, Preston, since it was built about 14 years since, and I came on duty there at 2 p.m. on 23rd July for eight hours. I have an assistant with me, and there is also a train booker and a telegraph clerk. All four of us were in the cabin when the collision occurred, about 4.21 p.m. The 3.30 p.m. train from Wigan for Windermere was warned on to me from Ribble Bridge at 4.11 p.m. on the slow line. I warned it forward to No. 2 cabin at 4.11 p.m., and I accepted it at 4.13 p.m., having, before doing so, to turn a special passenger train, which had been warned at 4.11 p.m. on the fast line, from the down fast to the down slow line before I could give "Clear" for the Windermere train to Ribble Bridge, and set the road for it to cross from the slow line into the platform line with home-signal No. 5. The platform line was not clear, and I accordingly kept up No. 5 signal till the train had come to a dead stand at it, and I then lowered the signal and gave the driver a green flag, the engine passing at 4.14 p.m. The next train warned from Ribble was the Blackpool express from Manchester; this was at 4.16 p.m. on the fast line. I passed on the warning to No. 2 cabin at 4.16 p.m. I stopped the train dead at No. 2 home-signal as I was not certain whether it would be able to clear the crossing from the up fast to the up slow line before the 4.25 up London train had to cross, and I asked No. 2 signalman on the telephone whether he could allow the Blackpool express to draw clear on to the platform, and he said Yes, as the Windermere train had drawn down. On receiving this reply I told assistant signalman Tattersall to lower No. 2 signal against which the engine of the Blackpool train was standing, and to show the driver a green flag. I did not see him do this, but I saw he had a green flag in his hand, and I asked him whether he had shown it, and he said that he had, but that the driver did not see it, though the fireman, who was on the framing of the engine, did see it. I thought the driver had started too quickly, but on seeing the rear home-signal of No. 2 cabin "off" I thought no more about it. The distant-signals below No. 2 home-signal and below the No. 2 cabin rear home-signal were both at danger. I have never worked in No. 2 cabin. I did not see when the rear home-signal was lowered, but I saw it off when the second vehicle from the engine of the Blackpool express was passing the cabin. The day was clear. I heard a bump, but I could not tell where, at 4.21 p.m. I had taken the Blackpool express "on line" at 4.18 p.m., and it passed at 4.20 p.m.

2. *Joseph Tattersall*, assistant signalman; seven years' service with the North Union Company, about five years assistant signalman.—I came on duty in No. 1 cabin, where I have been employed for about five years, on the 23rd July at 4 p.m., to remain till 4 a.m. I lowered No. 5 signal to admit the Windermere train to the platform line. It had been stopped dead at that signal for about a minute in consequence of the platform being occupied, and then passed into the station. The next down train which was signalled was the Blackpool express on the fast line. This train was stopped dead at No. 2 home-signal for about a minute, and I then lowered the signal by instructions from Cross after he had heard from No. 2 cabin on the telephone that the train could be admitted. I held out a green flag to the driver as it passed, to indicate to him that he might be stopped by the signal at the platform end. I do not think the driver saw the green flag, as he was looking out on the other side. I did not shout to him as I did not think he was going very fast. The fireman, who was on the framing of the engine, standing up, looked towards me, but did not give any affirmative signal. When the engine had got to the end of the platform Cross asked me whether I had shown a green flag, and I said I had and I am certain I did. I first saw the rear home-signal of No. 2 signal-cabin off when the engine was half-way between No. 2 home-signal and that signal, but it might have been off before this. Both distant-signals were on when the Blackpool express approached. The speed of the train as it passed was faster than I could walk, but not 10 miles an hour. I have no recollection of a light engine passing on the up fast line between the Windermere and Blackpool trains.

3. *John Clough*, signalman.—I have been 12 years in the North Union Company's service, and 11 years signalman. I have been employed altogether five years in No. 2 cabin, two years from 1882–4, as regular signalman, and for the last three years as relieving signalman once a week, but for the last two months again as regular signalman. I came on duty on July 23rd at 2 p.m. for eight hours. I work alone

in the cabin and book the trains. I work permissive block between Nos. 1 and Fishergate Bridge cabins, or between No. 1 and No. 4 cabins, when Fishergate cabin is switched out. I consider the rule as to admitting up trains to a platform line means that a train must be brought to a stand at both home-signals if the platform is already occupied by another train. The rules permit of any number of trains standing at the platforms at the same time. At 4.12 p.m. I got the "Be ready" for the Windermere train, and I accepted it at the same time with one stroke on the bell, though at this time there was a train standing at the south end of the platform. The train came on at once, and stopped dead at No. 27 home-signal, after which I lowered No. 27 to allow it to draw up to the rear of a train from Liverpool going north, which was standing at No. 1 platform, on both sides of the scissors crossing. While the Windermere train was standing in this position, with the two rear vehicles outside No. 27 signal, I received the warning for the Blackpool express at 4.16 p.m. I accepted it by one stroke on the bell, the indicator still pointing to "Train on line." The train from Liverpool had drawn ahead directly after I had accepted the Blackpool express, and the Windermere train followed it down and came to a stand with the rear vehicle about 30 yards north of No. 28 home-signal; it could not draw down the platform further as the train from Liverpool was still in front of it. I got the train entering section for the Blackpool express at 4.20 p.m. about a minute after the Windermere train had drawn north of No. 28 signal, and the Blackpool express had come on to about 30 yards south of No. 27 signal, and had come nearly to a stand, when I lowered No. 27 signal, the distant-signal below it remaining at danger. I watched the train, and I was not alarmed at its speed until after it had passed No. 28 home-signal, when its speed did not exceed four miles an hour. The driver was leaning over the left side of the foot-plate trying to stop, as I thought; the fireman I did not see. I could not speak as to the brakes, nor as to when steam was shut off. I did not see or speak to the driver after the collision. I forgot to book an engine which was warned from No. 1 on the fast line after the Windermere train had drawn down. I lowered No. 27 signal for that engine which set back into No. 4 siding before the Blackpool express was given on. Before the collision I had not been in the habit of stopping trains at No. 27 signal, but since the collision I have stopped them. After I had accepted the Blackpool express, Cross asked me on the telephone whether I could admit the train, and I replied "Yes."

4. *Pryce C. Griffiths*, guard, 20 years' service; 13 years with the London and North-Western Company, and eight years guard.—I was in charge of the 3.30 p.m. train from Wigan for Windermere on the 23rd July. I came on duty at 10.10 a.m. to remain till 7.40 p.m. We left Wigan at 3.50 p.m., 20 minutes late, due to heavy traffic, and to the train being run into two portions. My train consisted of engine and tender and 14 vehicles equal to 15, the rear one being a meat van and the one next it a brake-van in which I should have gone forward from Preston to Windermere. We were brought nearly to a stand on the slow line at the signal of Preston No. 1 cabin, and were next stopped at the south end of the platform, with the whole of the train alongside it. Some passengers got out, and in about two minutes the train drew ahead and the meat van stopped a short distance inside the home signal of No. 2 cabin. My train was not stopped by another train being still in front of it, as the train which had stopped it, had gone clear away. We had been standing about three or four minutes when the collision took place. At the time I was unloading luggage from the middle van, the sixth vehicle from the engine, and the collision took me unawares. I had heard no shouting or warning. The engine of my train had just hooked off to change, but the vacuum-brake was on the train. The train was hardly moved where I was standing, but at the rear the meat van and brake van were damaged and also the composite in front of it. The buffers of the engine got underneath the body of the meat van. I spoke to the driver of the Manchester train, who appeared none the worse for drink. He made some excuse about a signal being off, but I did not understand what.

5. *William Rawcliffe*, driver; 27 years in the Lancashire and Yorkshire Company's service; driver 13 years.—I am well acquainted with Preston station and have been accustomed to run in and out of it on the North Union line about two years. I commenced work on the 23rd July at 5.50 a.m. (having been off duty the day before) to sign off at 5.55 p.m. I had been standing about two hours at Cheetham Hill at midday. I brought the train for Blackpool from Cheetham Hill to Victoria station and thence started at about 3.21 p.m., one minute late, my engine being No. 870, an eight-wheeled engine with a leading bogie, and four coupled wheels and a six-wheeled tender, the train consisting of 14 vehicles including two brake-vans and two guards. The train was fitted throughout with the automatic vacuum-brake, the working vacuum being 18 inches. We stopped at Bolton and Chorley, the next stop being Preston; the brake acted properly at Bolton and Chorley. After shutting off steam at the Skew Bridge cabin about one mile south of Preston, my mate said that the piston-rod of the right-hand inside cylinder was working hot, and he went out on the framing to give it oil, and I am not certain when he came back to the foot-plate, but he was there before the collision. On approaching Preston No. 1 cabin on the fast line I found the right-hand home-signal at danger, but it was lowered when I was running at a speed of about two or three miles an hour, and when I was about 100 yards from it. I saw a green flag held out before I got to the cabin, but it was taken in before I passed. I understood the flag to mean that I might proceed to the next signal. The distant-signal below the home-signal remained at danger. A short distance north of No. 1 cabin I saw the rear home-signal of No. 2 cabin "off," but the distant-signal below it "on." I had shut off steam about this time. Seeing the home-signal off I concluded that I had a clear road to the north end of the platform and passed the rear home-signal at a good walking speed. It did not occur to me to look for the next home-signal at the scissors crossing, and I was not aware it was at danger till my mate called my attention to it when about half way between the two home-signals by saying "Wo!" I at once put on the vacuum-brake, the vacuum being about 18 inches, and struck the rear of the train at a slight reduction of speed. I think the brake acted well. I did not see the train till after I had put the vacuum-brake on. I do not remember that I was doing anything particular at the time. My place was on the left-hand side of the foot-plate; I did not apply the hand-brake to the tender, and I do not know whether the fireman did. I have been in the habit of running the same train, and have almost always had a clear road to the north end of the platform.

6. *Joseph James Jolly*, fireman; four years in the Lancashire and Yorkshire Company's service. I have acted as fireman for about 15 months, and have been a regular fireman for about three months. I have been with Rawcliffe for three months, and I was with him on the 23rd July, my place being on the right-hand side of the footplate. The journey from Manchester went all right so far as about one mile from Preston, where I saw for the first time that the piston-rod of the right-hand cylinder was smoking. I told Rawcliffe, and he told me to go and look at it, which I did, and came back and told him I found the piston-rod working hot—smoking very hard. He told me to take some oil to it, and I did so before we got to Ribble Bridge cabin. I remained in front of the engine attending to the piston-rod, until we got about 40 yards from the

train in front, when I first saw it, and went back along the framing, and called out to the driver "Look out!" He at once applied the brake and looked out at my side to see what it was. I then came on to the footplate and opened the sand-valves, and also applied the hand-brake, though the latter was of no use, as the vacuum-brake was on, and we both of us remained on the footplate till the collision occurred. We were neither of us hurt. I think the speed did not exceed two miles an hour when I first saw the train. We were about 60 yards from the signal of No. 1 cabin, and were going slowly when it was taken off, a green flag was shown until we had nearly reached the cabin, when it was withdrawn, and at the same time I looked and saw the signal at the south end of the platform off, and at this time I was under the impression that this was the advanced signal of No. 1 cabin, and thought that we had a clear road up to the north end of the platform. I saw nothing of the signal on the platform. I was afraid to leave the piston as it was still smoking badly when I saw the train. My working hours are the same as the driver's.

7. *Andrew Graham*, six years in the Lancashire and Yorkshire Company's service; two years guard.—I came on duty on 23rd July at 1.25 p.m., to sign off about 10.45 p.m. I was guard of the 3.20 p.m. train from Manchester for Blackpool, and was in charge of the front portion from Manchester to Blackpool, and travelled in the front van next to the engine. We had a train of 14 carriages with a brake van front and rear. We were slackened about Skew Bridge and Ribble Bridge, and when we got to Preston No. 1 cabin home-signal we were brought almost to a stand, being close up to the signal when it was lowered. The signalman at No. 1 cabin exhibited a green flag from his cabin window, and withdrew it as the train passed. We ran past No. 1 cabin at a speed of about three miles per hour. I had a good view, and was keeping a look out. Just as we passed No. 1 cabin I saw the rear home-signal for No. 2 cabin drop off, the distant-signal below it remaining on. Just about this time I was putting on my hand-brake in accordance with the rule, and just as we got to the platform I saw the middle signal on and I never saw it taken off. I could see the Windermere train in front just after we ran on to the platform. I did not at first feel the least afraid of striking it, but when we got under the signals I thought we should. I do not think we were going at a greater speed than two miles per hour when we struck the rear of the Windermere train. Shortly after turning the bend of the platform the driver applied his vacuum-brake, and reduced the gauge to zero. I was not injured, and no passengers complained to me of being hurt.

8. *Henry Hulme*, nine years in the Lancashire and Yorkshire Company's service; guard two months. I came on duty at 12.45 p.m. on July 23rd, to sign off at 11.30, and was guard in charge of the rear portion of the 3.30 p.m. train from Manchester for Blackpool. I am a summer guard and am stationed at Southport, and have been a spare guard for two months. I worked as extra guard all last summer. I was standing in the elevation of my van putting on my hand-brake when we struck the Windermere train. I was knocked backwards out of the elevation and sustained an injury to my head. We would only be going at a slow speed of four miles an hour at end of platform, and this was reduced on collision. No passengers complained to me of injury.

Conclusion.

The primary cause of this collision was a gross blunder made by signalman John Clough, on duty in Preston No. 2 signal-cabin, in lowering the rear home-signal to allow the Lancashire and Yorkshire Company's express train from Manchester for Blackpool to enter No. 1 platform line at Preston station while this train was still in motion a long distance from that signal. The train from Wigan for Windermere, the rear of which was run into by the Blackpool express, had been standing for about three minutes under cover of the advanced home-signal of No. 2 cabin, the last vehicle being about 30 yards north of or inside that signal. Under these circumstances the Blackpool express should have been admitted to the platform to draw up behind the Windermere train only after having been *stopped* at the rear home-signal of No. 2 cabin, 203 yards from the rear of the Windermere train. Instead of this Clough acknowledged that he lowered the rear home-signal when the train had come *nearly* to a stand, with the engine about 30 yards south of it. He acknowledged, moreover, that until the occurrence of this collision he had not been in the habit of stopping trains at this rear home-signal. From the evidence, however, of two signalmen in No. 1 cabin, and from that of the driver, fireman, and front guard of the Blackpool express, it appears that this rear signal was lowered when the train was passing or before it passed No. 1 signal-cabin, 145 yards south of this signal.

Clough has been 11 years a signalman frequently employed both as regular and relief signalman in No. 2 cabin, where he had come on duty on July 23rd at 2 p.m., nearly $2\frac{1}{2}$ hours before the collision, for a spell of eight hours.

While thus attributing the primary cause of this collision to the premature lowering by signalman Clough of the rear home-signal, it would never have occurred but for want of the most ordinary care on the part of William Rawcliffe, driver of the Blackpool express, when entering the station. It was of course very misleading for him to find the rear home-signal of No. 2 cabin off just after passing No. 1 cabin, and when he was at least 100 yards from the signal, but he had no right whatever to assume that he had in consequence a clear road to the north end of the platform (where he was in the habit of running with this train) and might overlook the advanced home-signal of No. 2 cabin which was admittedly at danger and was covering the tail of the Windermere train by about 30 yards. Rawcliffe was evidently keeping no look-out ahead after finding the rear signal off or he would have seen either signal or train

in ample time to have stopped short of one or the other, whereas his attention was first attracted to them by his fireman (who was returning from the front of the engine from putting oil on a piston-rod which had been working hot), when the engine was about 40 yards from the train. The automatic vacuum brake was then at once applied, notwithstanding which the collision was sufficiently violent to cause considerable damage to the two rear vehicles (happily vans) of the Windermere train and to damage a passenger carriage, the third rear vehicle.

Both Rawcliffe and his fireman gave absurd evidence as to speed, stating that it was not more than from two to three miles an hour, when the fireman gave the alarm. Rawcliffe has been a driver for 13 years; he had commenced work on the 23rd July at 5.50 a.m. (having been off duty the day before) to sign off at 5.55 p.m. He had thus been on duty about 10½ hours at the time of the collision. His engine had been at rest at Cheetham Hill for about two hours at midday.

The attention of Jolly, Rawcliffe's fireman, was no doubt taken up with applying oil to a hot piston rod as the engine was approaching and running into the station, or he might have seen, sooner than he did, the signal at danger and the train in front. Still there was nothing really to have prevented him keeping a better lookout from the front of the engine, where he was in the best position for seeing both signal and train, and he is accordingly deserving of censure.

The front guard of the Blackpool express states that he had put on his hand-brake on passing No. 1 cabin, and was under the full expectation his driver would stop at the advanced signal of No. 2 cabin, the collision taking him unawares when the speed did not exceed two miles an hour.

The rear guard was also taken unawares by the collision as he was applying his hand-brake. He thinks the speed was about four miles an hour at the rear home-signal and less on collision.

No blame is to be attached to the servants of the train from Wigan.

The occurrence of this collision directs serious attention to the lax observance of the rule which (when block system is not used) directs that a train must be *stopped* at the home-signal of a station before being admitted to that station behind another train already there, and with which train it may have to form a connection; the rule being also the same when the block signal "Section clear, but station or junction blocked" is employed. Nothing is worse for discipline than the existence of a rule the breach of which is tacitly allowed, and I trust that the companies concerned will take means to have the rule as to absolute stopping strictly enforced in future.

It is also desirable to make the rule as to the duty of the signalman at Preston No. 2 cabin with regard to the use of the down rear home-signals perfectly clear.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

C. S. Hutchinson,
Major-General, R.E.

Printed copies of the above Report were sent to the Joint Companies on the 17th September.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
3rd May 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 20th ultimo, the result of my enquiry into the circumstances attending a fatal accident, which occurred on Easter Monday the 18th April, at Hampstead Heath station, on the London and North-Western Railway.

In this case, while the people who had been visiting Hampstead Heath on Bank Holiday were crowding into the station on the up side of the line between 6 p.m. and 6.15 p.m., a crush occurred at the foot of the staircase leading down from the booking hall and station entrance to the up platform, resulting in the death by suffocation of two adult females and six boys, and the injury of 14 other persons, a nominal return of whom is appended.

Description.

Hampstead Heath station is situated between Finchley Road and Gospel Oak stations on the Hampstead Junction Railway, which is a connecting line between the London and North-Western Railway and the North London Railway, and was opened for passenger traffic from Willesden to Kentish Town in January 1860.

The line was at first worked by the North London Railway, but was taken over by the London and North-Western Railway in 1863, and is now used by both London and North-Western trains between Mansion House and Broad Street viâ Willesden, and North London trains between Broad Street and Kew and Richmond, with trains each way, at intervals of a quarter of an hour, and less at some periods of the day. The railway runs from west to east, and the line from Willesden to Broad Street is the up line.

The station, when first opened, was an ordinary roadside station, with a booking hall and station entrance upon a road bridge crossing the line, and a low level platform for each line of rails, 358 ft. in length and partially covered over, with access from above by staircases at each end of the booking hall, leading on to the platforms at their west end.

In 1870 an excursion platform 352 ft. in length and 9 ft. wide, was added at the east end of the up platform, alongside a previously existing siding, which is now a passenger bay line.

In 1880 some additions were made to the waiting room accommodation, and the platforms were improved, and in 1881 a ticket collector's box was added at the foot of each staircase.

The up platform is 15 ft. wide, and there is a verandah roof extending eastward from the staircase for a distance of 250 ft., the east end of the platform for a length of 108 ft., and the excursion platform beyond, being uncovered. The posts supporting the verandah are 8ft. 3 ins. from the edge of the platform, and the waiting rooms which are built out at the back of the platform occupy a length of 137 ft. about the centre of the platform, the bookstall near the west end of the waiting rooms being 90 ft. from the foot of the staircase.

The high-level portion of the station consists of a booking hall in the centre, 26 ft. by 20 ft., with a booking office at the back of it, and with double doors 4 ft. 6 ins. wide opening on to South End Road bridge. At each end of the booking hall is a small lobby 9 ft. 6 ins. by 6 ft. 10 ins. at the head of the staircases leading to the platform, entered by double doors 4 ft. 6 ins. wide from the road, and by double doors 4 ft. 6 ins. wide from the booking hall.

From these lobbies (which are really landings at the head of the staircases), the stairs lead straight down to the platform.

The staircases are in two flights of 15 steps, with a landing 5 ft. wide between the flights, and they are divided down the centre by a railing with banisters, some of iron and some of wood, 3ft. 2 ins. in height, and a hand-rail 3 ins. wide. There are outside hand-rails at each side 2 ft. 10½ ins. above the level of the steps, and projecting 4 ins. from the walls, and the available width of the staircase is 4 ft. 6 ins., between the hand-rails at each side of the dividing railing.

The steps have 11¼-in. treads, and 6-in. risers, and have slight nosings.

At the bottom of the staircase, immediately below the bottom step and at the end of the dividing railing, is a ticket-collector's box 2 ft. 2 ins. in width, and 4 ft. 6 ins. in length, and between the box and the wall on each side is an iron wicket gate, which is hung so as to open either inwards towards the stairs, or outwards towards the platform, and is, when shut, fastened by a roller catch, which holds but slightly unless it is locked, when it takes a considerable pressure to force it open. When opened inwards the gate lies against the wall, projecting rather a less distance than the outside handrail which ends at the bottom step, and can be secured in that position by a hook at the bottom.

On the bottom landing, which is a part of the platform, there is alongside the box an available width of only 3 ft. 6½ ins. between the side of the box and the gate lying against the side wall, which width is narrowed to only 3 ft. 5 ins. opposite to the hinges of the gate.

The half of the staircase nearest to the line of rails and nearest to the booking hall, is on ordinary occasions used as an entrance, and the half furthest from the line is used as an exit, passengers going down or up taking the right-hand side.

There is a bar which can be closed across the top of the exit side, but there are no means of closing the stairs at the top on the entrance side.

There is no exit or entrance for either the main platforms, or the excursion platform, except these staircases.

Between Hampstead Heath and Finchley Road there is a tunnel, the mouth of which is about 145 yards west of the former station.

Evidence.

Charles Humphreys states: I am a district traffic inspector in the service of the London and North-Western Railway Company, and have held that position for more than eight years, six of which I have been stationed at Willesden. During all that time I have had to deal with the working of the passenger traffic at Hampstead Heath. My district includes the main North-Western line from London to Cheddington, and branches, and includes all the London district. The ordinary staff at Hampstead Heath station consists of a station-master, one foreman, three porters, and two ticket collectors, and the ordinary train service consists of a train every quarter of an hour each way. Half the trains are London and North-Western trains from Broad Street to Mansion House and back; and the other half North London trains between Broad Street and Kew and Richmond. At Hampstead Heath station in addition to the main line platform used for ordinary up traffic, there is an excursion platform used only for Bank Holiday, and other special traffic. On such occasions there is a special service of trains from this platform, from Hampstead Heath to Camden Town, to relieve the ordinary service, the trains not being run at fixed times, but so far as may be necessary between the ordinary trains. On the 18th instant there were four up special trains between 4.30 p.m. and 6 p.m., timed to run as required. These left at 4.35, 5.23, 5.36, and 5.59. I saw all of them start myself, but I have taken the actual times from the signalman's book. In addition to the ordinary staff the following men were drafted to Hampstead Heath on Monday 18th instant for the purpose of dealing with the special traffic:—Chief traffic inspector Smith of Willesden; foreman Gilmore of Camden; relief man Easter, of Camden; relief man Sanders, of Camden; relief man Finch, of Willesden; relief man Ticehurst, of Tring; porter R. Slater, of Euston; porter T. Dorset, of Euston; porter Ealing, of Euston. In addition to the above there were two extra men stationed at the points, one of whom is able to devote a large part of his time to assist in getting the passengers into the trains from the excursion platform. There were also a ganger and platelayers stationed on the line itself, whose duty it was to prevent people from getting from the platforms on to the rails. The ganger was there all day. Although my duties extend to the whole district I was on Monday last devoting myself almost exclusively to the Hampstead traffic throughout the day, being at the station from 10 a.m. till half past two, when the traffic to Hampstead begins to get slack. I returned to the station soon after 4 o'clock and remained there till 5.59, when I had occasion to go to Finchley Road (the next station) in connexion with the working of the trains approaching Hampstead Heath on the up line. I returned by the next up train which reached Hampstead Heath at 6.17, at which time all the dead and injured people had been extricated, except Mrs. Eaton, whom they were just getting out. The up relief trains run from the excursion platform between 5 and 6, viz., 5.23, 5.36, and 5.59 were sufficient, together with the ordinary service, to deal with the traffic that came into the station between those hours. The practice is not to send away these special relief trains until they are quite full, and when this is the case the gate at the entrance to the excursion platform is closed. This gate was closed for the 5.59 relief train when I crossed from the up to the down platform to go to Finchley Road by the 5.59 down train. As I crossed the line the North London up train was running into the station, and this train would take a certain number of the passengers waiting on the up platform. At the time I crossed the line the up platform, from the bookstall to the bottom of the steps, was pretty full, but from the bookstall up to the excursion platform there was plenty of room. There was however some difficulty in getting people up to the excursion platform, because it is found that the same people came there year after year, and they know that if they go by the relief trains they would have to change at Camden Town, and further that the relief trains being special trains may not start until after a main line train has passed, although this is avoided as far as possible in working. The tendency therefore is for people to stop near the foot of the staircase where there is a fixed board inviting passengers to "Wait here for third-class," in order to get into the first ordinary train, rather than go up to the excursion platform. With a view to keeping the passengers away from the foot of the stairs, and getting them to move up the platform, and generally to preserve order and safety, and get the trains away, seven men were stationed, at intervals, on the up platform between the foot of the stairs and the excursion platform, two of them being stationed at the foot of the stairs. In addition to these men, the station-master and myself were constantly engaged upon the up platform, and when I left at 5.59, although the number of passengers on the platform was considerable, there was no unusual difficulty in getting them on to the platform, and getting them away. The train by which I returned from Finchley Road was the next following train to the up train already mentioned, which was running in when I left Hampstead Heath by the 5.59 down train. I rode in the front van, and, as the train approached Hampstead Heath station, I saw one of my relief men running towards the train with his arms extended. The train pulled up and drew slowly into the station. As the train passed the bottom of the staircase, I noticed the ticket collector, assisted by some of the public, getting out the people from the crush at the bottom of the stairs, whom I afterwards found had been killed or injured, and the platform was crowded nearly as far as the awning extends. Beyond that there was plenty of room for more people. When the train stopped the van I was in was close to the up starting signal, and I at once made my way towards the staircase, which I was able to do without difficulty until I got to within about 20 yards of the staircase. When I got to the staircase all the dead and injured had been removed except Mrs. Eaton. When I got to within about 20 yards of the staircase I met one of the porters who told me that five or six people were dead. This porter was the only man I noticed between the up-starting signal and the staircase, except traffic-inspector Gilmore, who was somewhere near the book stall, and traffic-inspector Smith, whom I had first seen carrying a child across the line as we were approaching the station. I saw one boy jump on to the line from the up platform as we were running into the station. I rather think relief-man Easter and ganger Sibley were on the line, trying to get the people on the up platform to move towards the excursion platform. When I left at 5.59, the only men whose position I can speak to definitely were Easter and Exton, who were at the bottom of the stairs; but I saw foreman Stretton and inspector Gilmore further up the platform. I know that signalman Sanders was also on the platform. I stepped down to cross the line within a few yards of the bottom of the stairs. I looked at the stairs at that time. There were a considerable number of people on the stairs, but not more than I have often

seen before on Bank Holidays. These people were moving down on to the platform, and at that time there was no block at the bottom of the stairs. I am certain that the catastrophe did not happen until after I had started, or for some minutes later, for the up train, which arrived as I was going out at 5.59, did not, I understand, start till 6.3 or 6.4. The gates at the bottom of the stairs were open. I can speak from my own knowledge that they were not closed between 4.20 and 5.59. Before I left I told Easter to be careful to keep the people moving forward from the bottom of the stairs. The train I arrived by was a North London train from Kew or Richmond. I cannot speak as to the number of passengers in it. There was not room in this train to accommodate all the passengers waiting to go away. We therefore ran a special at 6.26. The bulk of the passengers would have been third-class passengers. I should say 99 per cent. The third-class carriages both in the North London up trains, and in our up trains, are at the tail of the train, and stop near to the foot of the staircase. No doubt this to some extent accounts for the unwillingness of the people to go forward to the east end of the platform; but on a Bank Holiday we have to allow people to get in where they please, into any class of carriage. On these days the down traffic is very heavy up to about 2.30 p.m., and the up traffic began on that day at about 4.30 p.m., but was not heavy till about 5 p.m. The time of returning depends a great deal on the weather. In the morning there were four collectors on the top of the down-side staircase to take tickets. After 2 p.m. or 2.30 p.m. two are found to be sufficient at that place. During the afternoon there were no men stationed at the top of the up-side staircase. The only men on the top level would be the two booking-clerks, one man at the barrier in front of the ticket window to regulate the passengers, and one man stationed in the body of the hall, whose duty is to keep the passengers moving on, and to direct them as required. Neither of these men could be visible from the bottom of the staircase, or be within call of a man at the bottom of the staircase. There is an outer door exactly opposite to the head of the stairs, and persons who have not to book go straight in and down the staircase, without passing through the booking hall. These persons can pass down either side of the stairs, but all those coming from the booking office would naturally take the nearer or right-hand side. There were two local policemen outside regulating the traffic in the road, but none of our staff. There were notices outside telling the people where to book, but I cannot remember the wording of those notices. The arrangements on this day were exactly the same as they have been in former years upon Bank Holidays, except that upon more than one occasion we have had men stationed at the top of the stairs to check the tickets, and we have found that this has caused serious confusion at the top of the stairs, because sometimes persons without tickets, who may have wished to come in for shelter from rain or other reasons, have had to be turned back, and so a block has ensued. The examination of tickets was therefore given up at the top, and the men withdrawn. The tickets are not examined at the bottom either at crowded times on holidays. I have been at Hampstead Heath on all Bank Holidays for the last six years. The traffic on the 18th instant was heavy, but I have seen it heavier at Whitsuntide and in August. I did not observe any particular rush just before I left. It was not raining at the time, but there was a very black cloud, and I found it was raining and sleeting when I got to Finchley Road, but not heavily. It had ceased before I got back to Hampstead Heath. The staircase is the only exit or entrance on the up side. On ordinary days one side of the stair is used for entrance and one for exit, passengers keeping to the right-hand side in accordance with a notice at the top. There is a barrier which can be closed at the top of the left-hand side coming down, but there is none on the other side. I do not think it is often used. Tickets are taken at the bottom on ordinary occasions. I consider that when I am at a station I am representing the district superintendent, and it would be my duty to interfere if anything is going wrong: otherwise I would leave the arrangements to be carried out by the station-master. There was no special order given to me on that day, but there is a standing order that on Bank Holidays I am to attend generally to the arrangements on the Hampstead Junction line, and to see specially to the working at Hampstead Heath station. It would be the station-master's duty to post the extra men sent to the stations where he considers they are most wanted. This would not apply to traffic-inspector Smith who is sent to work with me. I did not give any special orders myself to any of the men, except that I sent Sanders from the down to the up side at some time after 4 p.m., as I thought he would be of more use there. All the men named have been employed at this station at Bank Holidays before, and knew exactly what to do. In addition to the ordinary main line up trains, which are 73 in number between 7.50 a.m. and 11.30 p.m., and the special up relief trains starting from Hampstead Heath, 10 in number between 4.30 p.m. and 11.30 p.m.; there were also 15 North London up specials stopping at Hampstead Heath after 4 p.m. These trains begin to get crowded after 6.30 on Bank Holidays. Most of the people come to Hampstead Heath from the east. I should say very few indeed come from the west, in the afternoon at any rate. Perhaps not above half-a-dozen alighted from the train I came in at 6.17. When I returned from Finchley Road and saw the state of affairs, I despatched porter Irons to fetch all the doctors he could get immediately. I also gave directions for the removal of the dead bodies to the waiting rooms. I also sent for some stimulants for one man, named Eaton, who was feeling faint. I wired to Willesden to have an engine and carriage ready to take injured persons to hospital. None went by that route however, and at the suggestion of the police I sent some away to Camden Town, and wired for cabs to meet them. Inspector Smith and Mr. Mills were at this time attending to the injured in the down-side waiting room. I got cushions from first-class carriages to place the injured upon, and I sent foreman Gilmore to Highbury with two of the injured, and foreman Stretton and signalman Sanders to Camden Town with two others. Generally I did all that I could when I got back to assist the injured, and the others of the staff were doing the same.

William Exton states: I have been a ticket-collector at Hampstead Heath for over 11 years, and have been employed at that station for upwards of 24 years. I was on duty on Monday last the 18th instant. I came on duty at 7 a.m. and should have left at 8 p.m. if there had been no accident. As it was I left at midnight. Soon after 6 o'clock I was in the box at the foot of the stairs on the up platform sorting tickets. Both gates at the foot of the staircase were open, and people were passing my box on each side to get on to the platform. There is no examination of tickets on Bank Holiday, and the passengers are allowed to pass down straight on to the platforms. While I was sorting my tickets I noticed the rack at the back of my box moving, and saw that it was being pushed in by the crowding of the people on the staircase. The next thing I saw was a boy's head coming through the window of my box next the line. The next moment another boy was caught by the ear on the left side of my box, the window being broken. I tried to release the boy's head, but finding it impossible I went out of my box and shouted to them up the stairs to go back as there was a boy being strangled. There was a great deal of noise and shouting. Relief-man Easter was with me at the box at the side next the line, and I was on the exit side. Up to 3.45 p.m. tickets had been checked as usual, and the gates at the bottom

of the stairs were kept closed as usual while trains were at the platform. Easter was assisting me in checking tickets, and directing the passengers to pass along. After 4 p.m. we gave up checking tickets for departing passengers. We continued to take tickets from arriving passengers, but left the gates open on both sides. The gates swing both ways, and can be locked shut by means of a key. If not locked by the key the least pressure would make them swing open, and a very slight pressure even when locked. They can be hooked back against the wall when opened inwards. They were on this afternoon opened inwards, but were not hooked. After 4 p.m. I was engaged in counting and sorting the tickets I had taken. I had no special orders that day, but I knew quite well from previous experience what were my duties. These duties were to keep at the bottom of the stairs and do all in my power to make the passengers move forward along the platform. When I saw my rack moving I was inside my box putting away the tickets which I had taken from passengers who came in by the train at about 5.59. There were not above 20 in all. Both sides of the stairs were crowded, and these people had difficulty in getting up, but they all passed my box. When the 5.59 train arrived the gates were open, and I just took the tickets as the passengers passed. At that time there was no stoppage at the bottom of either stair, but there was a crowd all the way from the foot of the stairs to past the book-stall, and the people would not move forward. The movement of the people at that time down the stairs was very slow, but there was a movement. Before I went into the box Easter said, "I will try to relieve the pressure," and he got down on the line, and went up the four-foot way to try to get the people to move forward At the time I went into the box the main-line train had gone away, and then Easter got down on the line. At that time there was no one on the ground at the foot of the stairs. There were people hollowing and shouting, as usual on these days, but there was no calling out for help that I heard, and I had not the least apprehension of any accident impending. I had hardly been a minute in the box before the accident happened. I came out at once, but had great difficulty in getting round the end of the box to face the stairs. I did all I could to get the people away from the foot of the stairs, and to stop the downward pressure from above by shouting and calling out to them, but no one seemed to take any notice. There was so much noise that I daresay the people did not understand what I was calling out about. I do not think a man at the top of the stairs could have heard me, if there had been one on duty there, and I had shouted to him. The only person I saw on the ground was the boy who was lying just below the bottom step. The people seemed to be wedged in a solid mass between my box and the wall Where I was standing the pressure could be taken off me by the box, the corner of which I was looking round. The first man who came to help was Easter, who came back along the line, and got up near the foot of the stairs. We tried our best to relieve the people who were being crushed, but were not able to do anything until more assistance came. The station-master, Inspector Smith, a relief-man, and some porters came, and then the people were got out. I do not think much more than five minutes elapsed before this was done. I know that before Inspector Humphreys came back the people were all got out, except one perhaps. This is the first accident which has happened at Hampstead Heath station since I have been there. The crowd that day was not greater than I have seen it before. The people had been coming steadily into the station, and there was no unusual crush until the accident took place. As soon as Inspector Smith came I think he went across the line and up the down side staircase to relieve the pressure from above, and to get assistance. When I first came to Hampstead Heath station the staircase was divided by a rail, as it is at present, but the box was not put up until about 11 years ago. The excursion platform was added after I came to the station, but I cannot say when exactly.

Harry Amos Easter states: I am a relief signalman and have been seven years in the service. I was on special duty at Hampstead Heath station on Monday last the 18th instant. I came on duty at 10.30 a.m. to remain till 11.30 p.m. Soon after 6 o'clock I was stationed at the bottom of the staircase on the up platform on the side next the line. There were then a great number of people coming down the staircase. As I stood by the edge of the platform I could see that though the crowd was very thick about the bottom of the stairs there was plenty of room above the bookstall. I therefore jumped down on to the line and went up towards the bookstall shouting and waving to the people to move on from the stairs. While engaged in doing this I heard a crash of glass in the ticket collecting office. I was then nearly opposite to the bookstall. When I turned round I saw the people jumping off the up platform on to the line. I helped a woman and a lad to cross to the down platform and then turning back to the up platform I saw a number of people laying in a heap in the gateway next the line. They were on the ground between the box and the wall about opposite to the hinge of the gate. They were on the platform level. I crossed to the down platform again and went up the stairs and through the booking hall and assisted to get the people back from the up platform staircase into the booking hall. It took some minutes to clear the staircase and when this was done I went down and assisted to get out the dead and injured people. I have been on Bank Holiday duty at this station on four or five other occasions. We have never had any unusual difficulty in dealing with the people. When I got down on to the up line it was after the 5.59 up train had gone. I do not remember speaking to Exton, but I may have done so. I did not myself take the ticket of any passenger arriving by that train, but Exton did. The passengers went away up the exit side of the stairs, which was not so crowded as the other. The side next the line was crammed full, and the people were standing, unable to move forward at all. They were standing quietly enough, and there was no pushing or crushing going on such as to make me apprehensive of an accident, but I got on to the line to try to move the people forward on the platform, so as to make those on the stairs to get down to the platform. I do not remember getting on to the up platform again before I went across to the down side, and up to the booking hall. When I saw that the people had fallen at the foot of the stairs I thought my best plan was to go up to the top to relieve the pressure there. I did not see any servant of the Company at the foot of the stairs at that time. I got my orders to stand at the foot of the stairs from Inspector Humphreys, and that is the post I have been at before for the same purpose. As far as I can remember the gates were only shut once that afternoon. They were open when I left the foot of the stairs, and still open when I got back. There was a greater crush upon this occasion just at that time than I have ever seen before. It seemed to come on rather suddenly. There was a dark cloud which came over, but no rain until after the accident. In previous years I have not experienced the same difficulty in getting the crowd to move forward from the foot of the stairs.

Thomas Sanders states: I am a relief signalman, and I have been four years in the service. I was on special duty as relief-man at Hampstead Heath on Monday the 18th instant, and I was stationed next to the foot of the stairs on the up platform, 15 or 20 yards distant from the foot of the staircase, and was, according to my instructions, trying to get the people to move up to the other end of the platform, where there was plenty of room for them. I helped to get the 5.59 special away from the bay, and then came back to my station and helped to get the

6.4 main line train away, which took a good number of people. I remained at my post trying to get the people to move up the platform, but it was very difficult to get them to move. Soon after the 6.4 had gone, my attention was called to the staircase by smashing of glass and screaming. I made my way to the foot of the staircase and helped to get the people out. When the 6.4 train left the east end of the platform was tolerably clear, but there was still a crowd at the foot of the staircase. I was about 20 yards away when I heard the smashing of glass. I went back at once along the edge of the platform. The people were pressing back towards the stairs to see what was the matter, and persisted in doing so in spite of all that I could say. When I got to the foot of the stairs I found some people—I cannot say how many—on the ground, between the wall and the ticket-box, and I saw a boy with his head through the window of the ticket-box next to the railing. The people were crowding back towards the stairs, and even if there had not been the jam between the box and the wall the people on the stairs could not then have got down. When I got to the foot of the stairs, Exton was out of his box calling out, and trying to move the people back. I think Easter was there too, but am not certain. I saw Easter then cross the line to the down side. Inspector Gilmore followed me down the platform, and there were other servants of the Company close behind. The first thing I did was to push the people on the platform back from the foot of the stairs, and I then assisted to pull out the people who were crushed between the box and the wall. I carried some across myself to the down platform. At the time I heard the crash of the glass, inspector Gilmore was next to me. I do not know who was beyond him, but I think inspector Smith was. Where I was standing there were at that time not many people, and the platform further east was quite clear.

William Ignatius Gilmore states: I have been 27 years in the service. I am a traffic-inspector at Camden. I have been on special duty at Hampstead Health on Bank Holidays for the last five years, and was so engaged on Monday the 18th instant. I saw the 5.59 special leave the excursion platform, and the main line train run in at the same time. I helped to get this train off, and remained on the up platform, about opposite to the waiting room, urging the people to move forward from the bottom of the steps towards the other end of the platform. After the train had gone there was plenty of room at the end of the platform away from the steps, but there was great difficulty in getting the people to move away from the steps. Soon after the departure of the train at 6.4, perhaps two or more minutes, I noticed people jumping from the platform on to the line. Up to that time, not knowing then that anything had occurred, I had been trying to get the people to the upper end of the platform to make more room at the bottom of the stairs. As soon as I saw the people jumping on to the line I jumped down myself to clear the line again, running along the line to the foot of the stairs, opposite to which the people had jumped down. While doing this a man shouted to me from the platform, "They are killing my wife on the stairs," and I then got on the platform and went towards the staircase, and found a lot of people crushed and wedged in at the gateway. I am quite positive the gate was open against the wall of the staircase, as I tried to pull a man out from that side, but I failed to do so. I then crossed the line, and went up the down-side staircase to get the people away from behind. I assisted to clear the staircase, and to keep it clear, not going down to the foot of the stairs again, while the dead and injured were being removed. When I first got to the foot of the stairs, I saw there Exton, who was trying to push the people back. I do not remember seeing any other Company's servant there at that time as I did not stay about half a minute after I had failed to extricate the man. I do not remember seeing Easter or Sanders at that time and place. I saw only one person down on the ground, and that was a woman near the bottom of the staircase. There was not anybody on the ground in the space between the box and the gate which was shut against the wall that I could see. The man I tried to pull out was over the woman who was down on the staircase. I did not succeed in pulling out this man. I saw a woman on the seat against the side wall of the station whom I believe to have been pulled out. I saw a boy with his head jammed against the box, and hanging by his head. I saw no other boys on the ground; there was another boy jammed against the gate on the other side. The head of the woman who was down was lower than the boy who was against the box. I felt the face of this first boy, and I think he was dead. It was after that that I tried to pull the man out, and did so again assisted by a bystander. He asked me to do so. When I failed I went across to go and try to relieve the pressure from the top. The outside doors were shut when I got there. I think Mr. Mills had done this, for, as I was going up the stairs from the down platform, I met him at the bottom, having apparently just come down. I left him on the down platform. When I got to the top I found one servant of the Company in the booking hall. I then went outside the station to try to get the people away, and to make them understand what had happened. There was also a policeman there. We got the people back. I then went inside to get the doors opened, so as to let a current of air down, and to allow the people on the stairs to come up, and the police to get down to give assistance without any delay. As I was going in I met inspector Smith, and told him we ought to have the doors opened. One of the relief men, I think it was, then opened the doors, and I then went outside again to keep the people back. I did not go down again until after the place was comparatively clear. I do not think the crowd was greater than usual on Bank Holidays. We would have been all right if someone had not fallen down at the bottom of the stairs.

Inspector *Gilmore*, recalled, wishing to make a statement, says: In the first place, just after the train left at 6.4, I turned round to look down the platform towards the stairs, and saw relief man Sanders, who was then near the book-stall, working the people up towards where I was standing, calling out to them to move higher up as there was room at the top of the platform. I omitted to state that after I jumped on to the line to go down to where the people were jumping on the line near the stairs, I saw a platelayer (whose name I do not know), and relief man Easter on the line trying to stop people from coming on to the line, and to assist those up again who had already jumped down. There were perhaps about a dozen people on the line. I wish to correct my evidence given yesterday as to the position in which I saw the woman on the ground among the crowd of people. Now I have considered it, she was in the space between the ticket box and the wall, against which the gate was standing when open.

John Smith states: I have been 32 years in the service. I am chief traffic-inspector of the southern division of the London and North-Western Railway Company, and I was on duty at Hampstead Heath station on Monday last from 12.30 p.m. to 11 o'clock at night. I was away from 2.30 to about 4.30, but otherwise was there all the time. I saw the 5.59 special leave, and also the main line train which followed it at 6.4, and after the departure of the latter train there was plenty of room between the waiting-room and the gates of the excursion platform. The end of the platform near the staircase was full, but there was nothing unusual then going on either on the staircase or the platform, and I crossed over to the down platform to see the down train away. A few minutes after the departure of the down train I

was standing at the Gospel Oak or east end of the down platform, looking out for the return empty special from Camden Town, when I heard screams coming from the direction of the staircase on the up platform, and saw people jumping down on the up line. I instantly jumped down and asked what was the matter. Somebody said there was fighting going on. I called out to relief-man Ticehurst, who was on the line also, to stop the up train. I got on to the up platform close to the staircase, and saw that the people were completely wedged in the gateway. One or two people had apparently fallen down, and they were trying to pull them out but were unable to do so. As soon as I saw it was impossible to extricate these people I crossed the line and went up the down staircase. I obtained the assistance of two policemen and closed the front doors to prevent other people entering the station. I arranged for clearing the staircase and returned to the up platform by way of the down staircase where I assisted in extricating the dead and injured. When the up train arrived at 5.59 I was on the up platform very near the staircase, and then I saw there was no special crowding. I then went along the train, and after it had started crossed the line near the gate of the excursion platform. The down train arrived at 6.4 and left at 6.5, and it was after that, at 6.7 or 6.8, that I heard the screams. When I got back to the foot of the staircase there were, I think, two of the staff there, but who they were I cannot say. Exton was one. I think Easter was on the line trying to drive the people back on to the platform. I do not remember seeing Sanders or Gilmore. There were other men on the line, but I cannot say I saw any others on the platform. I saw that people were wedged in on both sides of the entrance stair. I saw some people on the ground. There were more than one, I think, on the ground in the space between the ticket-box and the gate which was against the wall. I tried with others to pull out the people who were wedged in, but could not succeed. I then went across the line, up stairs, and out into the road, and asked a sergeant of police to come to assist to clear the staircase from the top. It was after that that I gave orders for the closing of the doors. After that, as I was coming down, I met the station-master going up, or coming through the booking hall. I met inspector Gilmore there also, or on the staircase. I did not give him any orders, but went down at once. At the time I was first at the staircase no one had been extricated, and when I got back one boy and a woman had been got out. When I got back I found of the Company's servants Exton, but no one else that I could see. Easter came soon afterwards. Sanders may have been there but I did not see him that I can remember. Soon after I got back I sent one of the porters for the doctors, to get all they could. This man was on the line.

Eli Mills states: I am the station-master at Hampstead Heath station, and have occupied that position for 24 years. I was on the up platform when the 5.59 special left the station, and I had been assisting to get the people to move up the platform towards the excursion platform. I remained on the up platform until the departure of the main line train, which took place after the departure of the special. I was at that time on the up platform nearer to the excursion end than the other. At that time the people on the platform at the staircase end were pretty thick, but from the bookstall on towards the excursion platform there was plenty of room. I then crossed the line to the down platform. While I was on the down platform, and after the down train had started, I heard a scream, and saw people jumping down on to the line, and I immediately went across, somewhere about the middle of the platform, but rather nearer to the staircase if anything. When I got on to the up platform I did my best to move the people away from the direction of the staircase where they were very much crowded. I made my way as soon as I could to the foot of the staircase, and I there saw the people jammed in between the gate, which was open and lying against the wall, and the ticket collecter's box, some down with the others pressing upon them. I tried to extricate some of those who were down, but found it was impossible. I crossed the line, ran up the down staircase, and closed the outside doors to the booking office, and I think those leading to the up staircase. I then called out for the police. I then ran down the down staircase again and crossed the line on to the up platform. When I got there I found the conditions the same as when I left to go up to the booking hall. No one had been got out at that time that I am aware of. When I got to the foot of the stairs the first time I saw Exton. He was at the gateway holding up his hands and calling out "Go back! go back!" and I did the same. I did not see any other Company's servant there at that time. I cannot say how many people were down, but there was a mass of people all wedged together. I do not remember seeing a boy in particular jammed against the box. There was not much calling out and shouting on the staircase. I found it was impossible to move the people, although I got hold of them and tried to pull them out. When I ran up the stairs from the down side I did not then see Smith or Gilmore. When I got out I closed the middle doors and called out to the police. The road was full of people, and I called out to them to summon the police, as there was a crush inside. Before seeing or speaking to any policeman I went down again. When I got back to the foot of the stair the second time, I found Exton there, still calling out to the people to go back. I did not see any other servant of the Company on the platform near the gateway. I then found that the people were in the same condition there, and I went upstairs again to try to get the staircase cleared from the top. I found that the police had come in, having been called by Smith. I did not see Gilmore, although he says he saw me. I left the police and one of the relief-men to clear the staircase from above, and then went down again. When I got down I found the foot of the stair was fairly free, and I attended to the people who were injured. At that time I think the up train was in. It was standing outside when I went across to go up the second time. I saw inspector Smith on the line on one of the occasions when I was crossing, but cannot say which, and spoke to him about getting doctors. The regular staff at my station is two clerks, two collectors, three porters, and a foreman porter. There are also two signalmen. On this day all were on duty. On ordinary days there are, up to 8 p.m., two porters and the foreman always on duty, and both collectors on, except when away for meals. The extra staff on the 18th instant was about the same as upon previous Bank Holidays. I considered there were a sufficent number for what was required. I posted one platelayer on the up side and one on the down side to assist on the platform. I posted Ticehurst, Sanders, Finch, and Slater for duty in the morning on the top at the down side. Easter I sent to assist Exton, and Dorset and Ealing, one on each platform, to assist with the trains. The ordinary staff were at their ordinary duties. In the afternoon the men were placed by Humphreys. I attribute the accident to someone falling down at the foot of the staircase. The crowd that day was not specially large. I estimate there were 30,000, that is 15,000 two ways. We have had larger crowds. There was a heavy cloud coming over just before the accident, and no doubt this caused the people to rush down for shelter. There is no special entrance or exit for the excursion platform. I once made a suggestion to the late district superintendent, to provide such an exit and entrance on the Southill Park Road. I would prefer it to run up the side of the station. The excursion platform was put in on my application some 20 years ago. Some addition has been made to the waiting rooms since, but there has been no other alteration. The ticket-box was put up in its present position in 1881.

George Stretton states: I have been 15 years in the service, and am platform foreman at Hampstead Heath station, where I have been altogether for 10 or 11 years. On the 18th instant I came on duty at 10 a.m. to work till 12 midnight. We get our meals in the porters' room. My duty on the afternoon of that day was at the east end of the up platform, looking after the special trains at the excursion platform. A little after starting a special train at 6.1 by my watch, I saw a lot of people jumping on to the ballast near the other end of the platform, and I made my way back there to keep them from doing so. There was a main line up train at the platform, or else coming in, when I started the special, and it was after the main line train had gone away that I saw the people jumping down. I went back along the platform till nearly opposite the urinals, and I then got on to the line and went back right to the foot of the stairs. There were then no passengers on the ballast, other servants of the Company having got them up. Before I could get on to the platform, someone handed a child to me to carry across to the down platform, as it had fainted. I handed the child to someone who was on the down platform, and went back and carried across two or three more children in the same way. I did not myself get on to the platform until after the up train, which had been stopped in the tunnel had arrived and had started again. I then got up, and at that time the foot of the stairs had been cleared or nearly so. I saw one woman who was dead and had just been pulled out. I think there were about 20 people who jumped down on to the line, at least that is as many as I saw at one time. I saw Mr. Mills on the line and a platelayer, and afterwards I saw Mr. Smith carrying someone across. The man who handed to me the first child was one of the relief-men, I cannot say which. I saw two relief-men near the foot of the stair at that time, but did not notice anyone else. The crowd was not greater than usual on a Bank Holiday, and the east end of the platform was pretty clear.

William Hemming states: I am a ticket-collector and have been 30 years in the service, at Hampstead Heath for about nine years. My ordinary duties are to collect tickets, changing sides with Exton. On the 18th instant there were extra men collecting tickets, and my duties were in and about the booking hall. I had to take the tickets from the other men and put them in the box in the booking hall. I had no other work that afternoon except no answer inquiries, and direct passengers to the booking hall. I had no special orders that day, but that has always been my work upon those days. Sometime about 6 o'clock I heard people crying out someone was being crushed, and to clear the station. I was in the booking hall which was packed with people, and there was a great crowd also outside. There was a platelayer also on duty in the booking hall. He, and I, and some police, helped to clear the people out. After all the people were out the doors were closed. Up to that time I cannot say whether or not I saw Mr. Mills or inspector Smith or Gilmore. This is the largest crowd we have ever had I think. A little before 6, I think, there was a sudden rush of people who appeared to be coming in for shelter. I cannot state exactly the time that this happened, but it was only a few minutes before the cry that the people were being crushed. I came on duty at 8 a.m., to work till midnight. I was not away for my meals. My ordinary hours are from 8 a.m. till midday, and from 4 p.m. to midnight.

Harry Irons states: I have been about four years in the service, and am a porter at Hampstead Heath, where I have been nearly a year. On the 18th instant I came on duty at 1 p.m. to work till 12.5. In the afternoon I was employed on the down side. Mr. Mills had told me what to do. I attended to the down trains, and, among other duties, I had to assist in getting ready the teas for the other servants of the Company in the porters' room. Some time before 6 p.m. I went and took Exton's place at the foot of the stairs on the up platform, and he went away to his tea. He came back at about five minutes to 6, and then I went up the stairs on the up side to see if Finch had been relieved in the booking hall. I found he had been relieved by Ealing. I then went across and down the stairs on to the down platform. There was a crowd, and it took me some time to get through the booking hall, and I was delayed by some one asking questions about the trains. When I got to the foot of the stairs on the down platform I saw inspector Smith on the line, carrying a little girl across to the down platform. I ran across to the up platform, and got on the platform and pushed my way to the foot of the stair. I found there Exton only of the servants of the Company. At that time the staircase was being cleared, and the people were being pulled out from the crush at the bottom of the stairs by the other passengers. I saw inspector Smith on the line, and foreman Stretton and platelayer Dorset. Inspector Smith came up on the platform, but he other two remained on the line, helping to carry the people across. Some one told me to go for some water, and I went and brought it to the down platform, where the people were lying. I then went across the line again, and then inspector Humphreys had returned. During the time I was taking Exton's place there was a considerable crowd, but no crushing on the staircase, and no stoppage at the bottom. I had to push my way up the exit side, but got up without any difficulty. The gates were open at the foot of the stair. When I got to the foot of the stair first, there were still some people on the ground, and I helped to pull one out, and I was then sent away for the water. When I got back the second time, inspector Humphreys and Stretton both told me to go for doctors. I fetched Dr. Evershed, who was the first there

Henry Finch states: I have been 11 years in the service. I am a relief signalman, and on the 18th instant I was sent to do special duty at Hampstead Heath. I had been there on bank holidays twice before. The station-master told me what I had to do. I was collecting tickets on the down side till 3.30 p.m., and after that I was sent to the booking hall to regulate the passing of the passengers at the booking office window. I stopped there till 5.55 p.m., when I was relieved by a man named Ealing, and I went away to tea. I was at tea alone, a little after 6 p.m., in the porters' room on the down side, when I heard an unusual noise. I looked out of the door and saw passengers on the permanent-way. I at once, without orders from anybody, went on the up line and towards the tunnel to stop any train which might be approaching. When I got near the tunnel I saw the up home-signal was off. I went as far as the tunnel mouth. I then turned round and saw that Ticehurst was following me. He went beyond me a few yards, and we both stood on the up line and gave hand danger-signals to the train which we heard approaching. The train stopped before it reached the mouth of the tunnel. I then went back to the station, not knowing what had happened. The train had by that time been brought up to the platform, and I got on to the platform through the front van, having on my way sent off the line people who were getting on to the line from the down platform.

John Ticehurst, relief signalman, states: I have been in the service of the London and North-Western Railway Company 11 years. I was on special duty at Hampstead Heath station on Easter Monday, April 18th, and have been on duty at that station on each succeeding Bank Holiday during the past ten years. I commenced duty at 10 a.m., and was instructed by Mr. Mills, the station-master, to take up duty at the top of the staircase on the down side for the purpose of collecting tickets. Just after the 6.4 p.m. down train had gone (the tickets of which I had assisted to collect) some little girls ran up the

down side stairs to where I was standing, and stated that some people had fallen over on the line. I immediately left my post, ran down the down staircase, and saw, on arriving at the bottom, a number of people on the permanent-way. Anticipating danger from an approaching up train, for which I saw the signal was off, I said to Finch who was standing under the bridge with a red handkerchief in his hand, "We had better stop the up train" and I proceeded to do so at once, followed by Finch. I do not recollect inspector Smith telling me to go, but he might have done so. I certainly saw inspector Smith there, getting the people off the line on to the platform, and also relief-man Easter. I was unaware at that time that anything had happened at the bottom of the up staircase and thought it was a panic amongst the passengers, as I saw one man deliberately push a woman over the edge of the platform on to the rails. I ran as far as the tunnel mouth, and succeeding in stopping the approaching up train before it emerged from the tunnel. I got on to the step of the engine and told the driver to be careful as there were some people on the line between the platforms. I also saw my inspector Humphreys, who was riding in the front van of the same train, and who asked me what was the matter. I told him there were some people on the line. I returned along the line by the 6-ft. way, and when I reached the west end of the platform, I saw Inspector Smith standing on the rails and bending over a little girl, who was laid at full length on the edge of the down platform. I heard him ask a gentleman who was moving her arms up and down if he was a doctor. He replied "No," whereupon inspector Smith immediately asked me to fetch medical aid. I ran up the down side and asked a policeman to direct me to the nearest doctor's residence. I did not know at the time I left the station for medical assistance that any crush had taken place on the staircase or that anything was the matter, more than this little girl, as I thought, having been pushed off the platform. I called upon two doctors neither of whom were at home. Just before the children came up the staircase to say people were on the line, a gentleman came to me out of the booking hall, and said there were some pickpockets amongst the passengers booking, who required to be looked after. There were a considerable number of people booking at the time. The individual pointed out as a pickpocket was pushing about amongst the passengers, but there was no rush through the exit doorways from the booking office to the head of the up staircase. There were not more passengers at the time than I have seen on many previous occasions, but the whistling and shouting was very great. When I was posted at the exit gate at 10 o'clock in the morning, I was assisted by Slater, Finch, and Saunders, who remained with me until the afternoon when the down traffic had become light, and Sanders and Finch were withdrawn. Finch being withdrawn to assist in the booking hall, regulating passengers, and Sanders to assist on the up side platform. When I returned from my search for doctors, I remained on the down side for the rest of the evening. We had our meals in the porters' room and only left our posts for a few minutes.

George Ealing states: I have been 10 years in the service. I am a platelayer, and on the 18th instant was sent to Hampstead Heath for special duty. I had been there once before on a Bank Holiday. I had a porter's coat on in the morning, but between 2 and 3 p.m. I gave this back to the porter, who wanted it. All the remainder of the afternoon I was in my platelayer's clothes. I got my orders from Mr. Mills. I was told to be on the up platform, at about the middle of it, to see that people got safe into the carriages, and to shut the doors, and also to keep the people moving up the platform. I was at this work till tea-time at about 5.20. After tea I came back. I then went to relieve Finch, who was in the booking hall. My duty there was to stand at the barrier at the ticket window and keep the people moving in the right direction. Soon after 6 p.m. I heard some people in the hall, which was crowded and full of people shouting, saying that there was a fight on the stairs. I could not get away, as I had to attend to the people who were booking. A minute or two later I saw Mr. Mills crossing through the hall, and then trying to get the people back from the stairs. There was a policeman close to Mr. Mills also trying to clear the people away. Mr. Mills was the only servant of the Company I saw up in the hall at that time until Easter came. Easter was shouting out to clear the hall, saying, "Clear out, clear out." I am not aware that I saw either inspectors Smith or Gilmore there. I cannot say whether the doors were shut or not. I remained in the booking hall until a policeman sent me to look for the station-master, and I went down the down side stairs. That was after all the injured people had been got out.

Thomas John Dorset states: I have been over five years in the service. I am a platelayer, and and on the 18th instant I was sent on special duty to Hampstead Heath. I have been there once before on similar duty on Whit Monday. I was in slop uniform. I was told by Mr. Mills and Mr. Humphreys what I had to do. My duties were on the down-platform to keep the people off the narrow strips of platform at the west end of the station near the foot of the stairs. I was at this post all day, except when relieving some other men who went to dinner. At 6 p.m. I was on the down platform at this place. The first thing I noticed amiss was after an up main-line train had started, when I saw some people jumping on to the line off the up platform, and heard screaming. I jumped on to the line and assisted inspectors Smith and Easter to get the people back. Foreman Stretton also came up. I did not get on to the up-platform near the foot of the station, but before foreman Stretton came I carried an injured person across the line, and also a little girl. I was on the line close opposite to the foot of the stairs. I could not see the foot of the stairs, and cannot say what servants of the Company were there. Those I have mentioned were on the line. I think there may have been as many as 50 people on the line, but cannot be sure. Just about the time that the up main-line train which had been stopped by Ticehurst and Finch was running in foreman Stretton sent me away with the key of the excursion platform gate, and told me to open it as soon as the empty special which had just been crossed had got to the platform. I went and opened the gate, and then came back and gave the key to Stretton, and then went to fetch water.

Richard Slater states: I am employed in the permanent-way department of the London and North-Western Railway Company. I am also engaged on holiday occasions at Euston station as porter, and at Hampstead Heath on all bank holidays, and have been so employed at the latter place for at least nine years past. I commenced duty at Hampstead Heath on Easter Monday, April 18th, at 10 a.m., being supplied with uniform jacket and cap. Mr. Mills the station-master posted me on arrival at the down platform exit, which is on the top of the stairs on the booking office level. Three other men—whom I know by sight but not by name—in uniform were also with me at the same spot, for the purpose of collecting the tickets of the down passengers. I assisted in collecting the tickets of the passengers who arrived by the 6.4 p.m. down train, and shortly afterwards I heard screaming from the platform. Immediately after I heard somebody say from the down staircase, "There's a fight!" whereupon I left my post and ran down the down stairs, and on reaching the bottom I saw a lot of people on the line, running about. I think Ticehurst preceded me. Inspector Smith met me at the bottom of the staircase and told me to run and fetch all the policemen I could to keep the people back. I ran back at once

and found one policeman just outside the down side doors, and another in the road. I requested them to come at once to render assistance in the station, which they did. I returned to the platform by way of the down staircase. On reaching the bottom of the staircase I was about to cross the line to the up side where I saw a panic amongst the passengers, when a little girl was placed in my arms by somebody, I cannot say who. The child seemed to have fainted. I carried her at once into the porters' room, loosened her clothing round the neck, and with some water did my utmost to bring her round. Thinking I could do better with her in the open air I carried her in my arms to the doorway of the porters' room, where she came round and was able to stand upon her feet, and tell me she felt better. I left her in the porters' room in charge of one of the men who was there, and myself proceeded again to the bottom of the down staircase, from which place I saw Mr. Mills, the station-master, and inspector Smith, with several of the Company's uniformed staff, at the bottom of the up staircase, assisting some people lying at the bottom of the stairs, and then I saw two or three of our men, whose names I do not know, assisting to get people off the line. At the same time I met a young man who told me he was a medical student, and he asked me to assist him to carry a woman into the waiting-room who was in a dying condition. She was then lying at full length on the seat alongside the wall of the down platform, close to the ticket-collector's box. A policeman was there, who, with the assistance of myself and the medical student, carried the woman to the ladies' waiting-room at the east end of the down side platform. I assisted the policeman and the medical student to release the woman's clothing, but finding we could not do so effectually, I called a female from the platform to undress the injured person. I remained supporting the head of the injured woman for about five minutes, when the medical student said she was coming round. I was then about to return to see if I could render any further assistance on the platform, when, in turning round, I met a man in the doorway of the waiting-room supported by a woman, who turned out to be his wife, and a friend. The injured man was placed by them on the seat running alongside the wall of the ladies' waiting-room, and noticing him beginning to fall I caught him in my arms and laid him at full length upon the seat, with his feet towards the feet of the injured woman with whom I had previously been assisting. I immediately proceeded to loosen his clothing round the neck. Some brandy was sent for, which was brought immediately. At this time the medical student, who had been attending upon the woman, came up to the man, whose head I was then holding. I then said to the injured man's friend that I might perhaps be of more assistance to some of the others if he took my place, and I left him and the medical student in charge. I returned to the bottom of the up side staircase, and found the dead and injured had all been removed, and the traffic moving as usual. I was probably in attendance, first with the child, then with the woman, and subsequently with the injured man, about half an hour. I then returned to my post at the down platform exit. I have seen far more people on Hampstead Heath station on a Whit Monday and August Bank Holiday than on this occasion. Prior to the mishap the traffic had worked smoothly throughout the day, and there was nothing to lead me to think that the working would not pass off as usual.

George Jesse Goodwin states: I have been in the service of the London and North-Western Company about four years, and have been stationed at Hampstead Heath as a porter about 13 months. On Easter Monday, April 18th, I commenced duty at 6 a.m. I attended to my regular duties during the morning, and assisted with the trains on the up platform during the afternoon which is part of my ordinary duty. In addition to assisting with the trains as they run in I have to work the passengers forward to the excursion platform when the empty train arrives, and this I was doing with several other Company's servants. I think it was about 4 o'clock when foreman Stretton instructed me to prepare tea for the other men who are not allowed to leave the station, and can only be spared from their posts one or two at a time. The tea is provided from the Railway Hotel and I fetch it in as it is wanted, filling up my time on the down side. I left the station about five minutes to 6 to obtain further supplies. A heavy cloud overhung the station and a few drops of rain fell as I went along. The tea was not ready, and I was kept waiting a few minutes for it, being absent from the station about 10 or 15 minutes. When I returned the roadway in front of the station was very full of people, and I had a difficulty in pushing my way through the crowd. I passed down the downside staircase and on reaching the bottom saw two women; one laying on the platform, and the other on the platform seat. I thought they had fainted. Someone said to me—Slater I think it was —"Go and fetch some water." I ran to the porters' room close by, put down the tea, &c. I had brought in, picked up my water can and filled it with water from the tap at the east end of the platform. As I was returning with the water inspector Smith and Mr. Mills both saw me and told me to run for a doctor as there had been an accident, but I did not know what it was. I ran at once and called at Dr. Gwynne's and at another doctor's in Rosslyn Hill. When I got back to the station the up staircase was clear and foreman Stretton instructed me to assist to remove those of the injured who had been taken across to the down side waiting room back to the up side to go away by train, which I did. I did not know what had happened until I came back from fetching the doctors. I did not notice that we had any more passengers to deal with than on previous Bank Holidays, and when I left the station at a few minutes to 6 there appeared to be about the usual flow of people for a Bank Holiday, and I certainly saw nothing to lead me to suppose any mishap would arise in dealing with them.

John Alfred Wilson Bailey, states: I am a porter in the service of the London and North-Western Company, have been in the service four years, and have been employed at Hampstead Heath about fourteen months. I came on duty on Easter Monday, April 18th, at 6.30 a.m., was engaged during the morning in my regular duty cleaning up station, &c., and assisting with the down side train. About midday I relieved two of the collectors at the top of the down-side staircase, while they had their dinner in the porters' room, being absent from the platform about half-an-hour. During the afternoon I was again stationed on the downside platform attending upon the down trains. A few minutes before six o'clock, I noticed a very dark cloud come over, and as it was part of my duty to light up the staircases and booking hall, I proceeded up the down-side staircase, lighting the gas as I went, intending to pass through the booking hall and down the up-side staircase to the up platform, but when I had lighted the gas in the booking hall, I found the place so busy that I returned to my post on the down side by the down-side staircase. On reaching the down platform, I saw a lot of people jumping off the up side platform on to the line. Dorset, Easter, and Stretton were also on the line getting the people back again on to the platform, and urging them forward to the top end, where there was plenty of room. I at once commenced to assist them (but did not see any crush at the foot of the up staircase), when Mr. Mills, who was on the up platform so far as I can remember, called to me to run up stairs and close the front doors to keep the people back. I ran straight up the down staircase, closed the front doors at the top of the down staircase, then made my way into the booking hall to close the other front doors, but found someone had already done this. I saw Mr. Mills and a policeman in the

booking hall, urging the people to pass out from the up staircase, and I did all I could to get the people out into the road, one of the doors at the top of the down staircase having again been opened to let the passengers pass out. There were several other Company's servants there. When the people had been got back from the up staircase I went down that way and met Easter carrying a little boy up toward the top. When about two-thirds of the way down, somebody, I cannot say now who it was, placed a boy, I think he was dead, in my arms. I carried the lad to the top, thinking I should find Easter there, but as I could not see him I took the boy out into the road and handed him over to a policeman who was standing in the road by the cab rank. I then ran back to see if I could render any further help when I met Mr. Mills, who instructed me to go at once for Dr. Cooper and Dr. Cooper Rose, which I did. When I returned to the station the dead and injured had been removed and the staircase was clear.

Henry Sibley states: I am a ganger in the London and North-Western permanent way department on the Hampstead Junction line, and have been so employed for the last seven years. I have, with one exception, been engaged at Hampstead Heath on Bank Holidays during the whole of that time. I always have, and had on Monday, April 18th, two men engaged looking after the points over which the special trains pass to get into the excursion siding, to make sure that all is right, and one of these men assists in loading up the passengers at the excursion platform, as he is at liberty after the empty train is set until the next empty train arrives. About 6 p.m., as near as I can remember, I was standing by the signal-box, having been down to see that everything was going on satisfactorily at the siding, when I saw a lot of people on the line between the platforms, and as it is a part of my duty to see that passengers are kept off the line, I ran back to where the people were, found Dorset, Finch, and others getting them back on to the up platform, and urging them to pass up to the top end of the platform, where I noticed as I went along there was room for plenty more. After I had seen the line cleared of the people who were upon it, I made my way to the west end of the platform opposite the bottom of the staircase, and could see several persons, Company's servants and others, engaged in removing the people who appeared to have been injured. I then rendered all the help I could in getting the people who were hurt away by train to the hospital and to their homes. I did not know until I had cleared the line that any accident had taken place. It rained a little before I left the ground by the signal-cabin, and looked dark and threatening.

William Leonard states: I have been about 20 years in the service, and a signalman at Hampstead Heath for about 17 years. On the 18th instant I came on duty at 3 p.m. to work till 12. A special train to Camden Town left the excursion platform at 5.59 p.m. A North London up passenger train was given on line from Finchley Road at 5.52, arrived at 5.59, and left at 6.4. I lowered my starting signal at 6.4, as soon as I got line clear from Gospel Oak for the special train. The next up train was a North London train, which was given on line from Finchley Road at 9.5, and arrived at 6.17. It was stopped outside the station. It left at 6.20. A down North London train left at 5.59, and was cleared from Finchley Road at 6.4. A London and North-Western down train arrived at 6.4, and left at 6.5. An empty train arrived on the down line at about 6.15, and was crossed into the excursion siding as soon as possible, and left at 6.26.

Nicholas Scullion states: I am a passenger guard, and have been 17 or 18 years in the service of the North London Railway Company. On the 18th instant I came on duty at 1 p.m. to work till 11.10 p.m. I was under guard of the 5.19 p.m. up train from Richmond. I think that the starting-signal at Hampstead Heath was on when we ran in, but I cannot be sure. I was riding in the front van, and I got out immediately we stopped. The platform was crowded at the west end, but there was not a great crowd opposite to the front of the train. When we arrived we had not many passengers in the three second-class carriages which were in front, and we filled them up. We also put a lot into the three first-class carriages, and I think we nearly cleared the front part of the platform. The starting-signal was off as soon as we were ready to start. My attention was on the crowd of passengers when we ran in. There were certainly two North-Western men on the platform at my end of the train, and there may have been more. I saw the station-foreman Stretton, near my van, working his way towards the third-class end.

Thomas Hill states: I am a passenger guard, and have been about 38 years in the service of the North London Railway Company. On the 18th instant I came on duty at 1 p.m. to work till 11.10 p.m. I was guard of the 5.19 p.m. up train from Richmond, which arrived at Hampstead Heath at about 6.3 a.m. and left at 6.6 p.m. It was an ordinary train of 10 coaches and two vans. There were three third-class coaches, all at the rear of the train, and a van behind them in which I was riding. The rear carriages were all quite full, with people standing up in nearly all of them. I cannot say whether any got out at Hamstead or not. I do not think any got in at all at my my end as there was not room. The platform was very full when we came in. I think the crowd was greatest at my end of the platform. I got out on arrival and went forward about two coach lengths. I had difficulty in doing so. I cannot say whether the starting-signal was on or off as we ran in, but I saw it off before I gave the signal to start. There was no delay in starting because of the starting-signal being against us, but it took some time before it was safe to start on account of the people crowding to the carriages. At the time we started there was nothing particular to attract my attention to the staircase. There was no screaming for help, and no wedge of people at the bottom of the stairs. Nothing more than the usual Bank Holiday crowd. I saw a ticket-collector at the foot of the stairs, and some other servants of the company on the platform.

Charles Stevens states: I am a brakesman, and have been nearly 18 years in the service of the North London Railway Company. On the 18th instant I came on duty at 2.30 p.m. to work till 11.15 p.m. I was acting as head guard of a special up train which left Kew Bridge at 5.50. It was a 12 coach train, with four second-class carriages in front, three first-class in the middle, and three third-class at the rear and a front and rear van. We started at 5.30. We were stopped in the tunnel when approaching Hampstead Heath station, and stood for about a minute. When we stopped at the station my van was nearly opposite to the foot of the staircase. The platform was crowded and I could not see very well what was happening at the foot of the stairs. A young woman in an excited state was brought to my van by a porter, and he said that the station-master wished her to be taken to the van. I refused to take her as it was against orders. I did not know there had been an accident of any kind at that time. I saw a policeman close by and I thought at the first the young woman was a prisoner. I was then called away to look after some fighting which was going on in the carriage next to my van. My train was not crowded when we arrived, and we picked up a number of people at Hampstead Heath. We started at 6.21, and I should think we stood for about three minutes or so at the station. I was looking after my train all the time and trying to quell the row.

Conclusion.

The history of this sad accident, as narrated by the servants of the Railway Company, whose evidence taken by me is recorded above, and by other independent witnesses, whose evidence given at the Coroner's inquest has been supplied to me, is as follows:—

On Easter Monday, the day being fine, there was a large number of visitors at Hampstead Heath, principally from the north and east of London, but the crowd does not appear to have been greater than on previous years, or so great as it has been upon the Bank Holidays later in the season. The down traffic up to 2.30 p.m. was heavy, and it has been ascertained that 30,100 people, or over 15,000 each way, exclusive of season ticket-holders, used Hampstead Heath station on that day, but the arrivals were, as usual, spread over some considerable time, and there was no serious crowding. At about 4.30 p.m. the return traffic from the up side commenced, and became heavy at about 5 p.m., and, in addition to the ordinary main line trains, there were, between 5 and 6 p.m., special trains started from the excursion platform at 5.23 p.m., 5.36 p.m. and 5.59 p.m., which trains went away fully laden. There were also up main line trains calling at the station at 4.54 p.m., 5.5 p.m., 5.23 p.m., 5.39 p.m., and 5.59 p.m.

At a little before 6 p.m. there were signs of an impending storm of rain, and passengers in great numbers began to flock to the station, which became crowded to the extent that, after the departure of each train, there were many people left upon the platform, having been unable to find accommodation in the train, but there was no great crowd except upon the western half of the platform, near to the entrance staircase, and at the point opposite to which the third-class carriages of the main line trains stop. In spite of all the efforts of the Company's servants, it was impossible to get the people to move further along the platform, or to go to the excursion platform, probably because, in the first place, they wished to get into carriages of the class for which they were booked; in the second place because many of them knew from past experience that if they went away in one of the special trains they would have to change at Camden Town, if they were going further than that station, and moreover thought that the main line trains would take the precedence; and in the third place because they wished to keep under shelter. The western end of the platform therefore became more and more congested, making it difficult for the passengers coming down the staircase to reach the platform at all, and the side of the staircase nearest to the line gradually got so crowded that the people upon it became almost stationary. Still, at 5.59 p.m., when Inspector Humphreys, the senior officer of the Company on the spot, went away on duty to Finchley Road station, there was nothing to cause any apprehension of danger, or to lead anyone to think that the passengers would not all get safely away as in former years. At about 6.6 p.m., however, or soon after a down train had left the down platform at 6.5 p.m., there was an unforeseen catastrophe. Owing, apparently, to the threatening look of the weather there was a sudden rush for shelter, and the crush became dangerous on the right-hand side of the staircase (coming down), which side was not only, like the other side, open to the people with return tickets coming straight in from the street, but was also the one which the stream of people who had taken fresh tickets, and were coming from the booking hall, would naturally select. At this moment, owing to some obstruction at the foot of the stairs, the narrow passage between the ticket collector's box and the wicket gate, which was undoubtedly open, and lying against the side wall, became filled by a mass of people, so tightly wedged together that they could not move forward, and could not even for some time be dragged out by main force.

The evidence as to the nature and the immediate cause of the obstruction, and as to the actual position of the persons who were wedged together differs considerably, but it is certain that more than one person was on the ground, and was injured or killed in that position, while some were actually pressed to death while standing up, and one, a boy whose head was forced through the window of the ticket collector's box, was strangled. It is my impression, after considering all the evidence, that this poor boy was the first sufferer, and that, immediately after he had been forced into the position in which he died, and from which it was impossible to extricate him, someone, possibly tripped up by his legs, fell down in the narrow place. Whatever was the nature, however, of the first obstruction in the narrow space, the result was that the crush became worse and worse, as the people on the stairs behind, not knowing what had happened, continued to press down, and the crowd on the platform, hearing the smashing of

glass, and the outcries of those in the crush, pressed back towards the stairs to see what was the matter, so that the work of extricating those who had fallen was very difficult, and indeed could not be effected until, by the action taken at the top, the stairs were partially cleared, and the downward pressure relieved. The only servant of the Company at that time at the foot of the stairs was ticket-collector Exton, and there was so much shouting and noise upon the staircase that neither he, nor anyone else, could make the people higher up understand what had taken place, or prevent them from pushing forward.

The time at which the last of the dead and injured persons was extricated is fixed accurately by the evidence of inspector Humphreys, who returned from Finchley Road by a train which arrived at the platform at 6.17 p.m., having been stopped outside the station by the prompt action of two of the Company's servants who, upon seeing a number of the panic-stricken passengers jumping down on the line from the up platform, ran out for some 150 yards for this purpose.

Inspector Humphreys states that when he got to the staircase the last of the victims was being taken out, so that the whole affair only lasted for about 11 minutes, viz., from 6.6 p.m. to 6.17 p.m., in which short space of time, or even less, eight unfortunate persons were suffocated, and 22 were injured.

Such being, briefly, the sequence of events it becomes necessary to consider: —

1st. What were the special arrangements made by the Company to cope with the Bank Holiday traffic at the station.

2nd. How their arrangements were carried out at the station.

3rd. What was the action of the station staff when the emergency arose.

4th. Whether the station is fitted for such a traffic as there is at this place on Bank Holidays.

1. It is proved, beyond question, that the arrangements made upon this occasion were exactly the same as in recent former years, and that both the station-master and the traffic inspectors, who were as usual detailed to supervise the Bank Holiday traffic upon this section of the line, and especially at Hampstead Heath, were quite satisfied that the number of men at their disposal was sufficient.

The regular station staff consists of a station-master, two booking clerks, two ticket-collectors, one foreman porter, and three porters, all of whom were upon duty; and to assist them upon this particular day there were detailed, in addition to district traffic-inspector Humphreys, and traffic-inspector Smith, who were in general charge of the traffic upon the line, the following men, whose duties were confined to Hampstead Heath station, under the orders of the station-master :—

Inspector Gilmore, of Camden.
Relief-signalman Easter, of Camden.
Relief-signalman Sanders, of Camden.
Relief-signalman Finch, of Willesden.
Relief-signalman Ticehurst, of Tring.
Porter Slater, of Euston.
Platelayer Dorset.
Platelayer Ealing.

There were also two men stationed at the points at the east end of the station, one of whom was able to assist on the excursion platform, and the ganger of the regular platelayers gang was there with his men to assist in keeping order upon the line. In all, therefore, there were for duty at the station, exclusive of the two traffic-inspectors and the permanent way men, 17 servants of the Company, all of whom were either regularly employed at the station, or had been at the station upon similar duty before, some for several years past, and all of whom, except the booking clerks who were in the office, and platelayer Ealing, who was in the afternoon in his ordinary clothes, were in the uniform of the Company. Arrangements were also made to run special trains from the excursion platform as required, and as in previous years.

2. Most of the extra men were told by the station-master what they were to do, but some went to the posts occupied by them in previous years without any special orders, and, after the changes made on the cessation of the rush of down passengers, they were posted as follows in the afternoon :—

Station-master Mills in charge.

Regular Station Staff.

Foreman Stretton, at the east end of the up platform.
Porter Irons, on the down platform.
Ticket-collector Hemming, in the booking hall.
Ticket-collector Exton, at the foot of the staircase on the up platform.
Porter Bailey, on the down platform.
Porter Goodwin, on the up platform.

Extra Staff.

Inspector Gilmore, about the centre of the up platform.
Relief-man Easter, with Exton at the foot of the staircase.
Relief-man Sanders, on the up platform, about 30 yards from the staircase.
Relief-man Finch, in the booking hall.
Relief-man Ticehurst, at the top of the stairs on the down side.
Porter Slater, at the top of the stairs on the down side.
Platelayer Dorset, on the down platform.
Platelayer Ealing, on the up platform.

At 6.5 p.m. these men were at their several posts, except that porters Irons and Goodwin were engaged in getting ready the teas for the other men in the porters' room, and platelayer Ealing had taken Finch's place in the booking hall while the latter was at his tea.

At this time inspector Smith was at the east end of the down platform, inspector Humphreys had just left for Finchley Road, and station-master Mills was standing about the middle of the down platform.

The five men on the up platform had special directions to keep the passengers moving forward towards the east end, so as to keep the foot of the stairs clear, and relief-man Easter had left the stairs and had got down on to the line and walked along it for a distance of about 30 yards, to try to get the people to do so, leaving Exton alone at the foot of the stairs.

3. When the accident occurred, Exton was inside the ticket-collector's box, and all he was able to do upon first coming out was to try to keep the people back, but he never left his post, and seems to have done his best to extricate those who were in the crush.

The action of the other men was as follows :—

Inspector Smith, seeing the people jumping on to the line sent Ticehurst to stop the up train, then crossed the line and went to the foot of the stairs, and after trying in vain to get some of the people out of the crush, went up the down side staircase to get police assistance and had the outer doors closed. He then came back to the platform to assist at the foot of the stairs, but seems to have been employed principally in carrying the injured people across to the down platform.

Station-master Mills, hearing screaming, went to the foot of the stairs, tried to extricate some of the people from the crush, then went across and up stairs to get assistance and to close the outside doors, then came back and again tried without avail to extricate the people from the crush, then went upstairs again to get the police, and to get the top of the stairs cleared, and then went back to the up platform, and found that the place was fairly clear.

Inspector Gilmore, seeing the people jumping on to the line went first to get them back, and then went to the foot of the stairs. He also made an attempt to pull out one man but failed, and he then went across the line and up to the booking-hall, meeting Mills and Smith. He had the outer doors opened, and occupied himself in getting the top of the stairs cleared, not going down again until this had been done.

Relief-man Easter first helped some people who were on the line to cross, and then went back to his post, but seeing what had happened he went across and up to the booking-hall to try to relieve the pressure from above ; this took some minutes, and he then went back to help to clear the foot of the stairs.

Relief-man Sanders, hearing screaming, went to the foot of the stairs, getting there just before Gilmore. He remained there giving assistance, and carrying people across the line.

Foreman Stretton saw people jumping on the line, and went back to the west end of the station. He did not get on to the up platform at all till the stairs had been nearly cleared, but he carried injured children and others across the line.

Ticket-collector Hemming remained in the booking hall and assisted in clearing it.

Platelayer Ealing did the same.

Porter Irons, who was in the booking hall at the time, went down, saw Exton only at the foot of the stairs, and people being pulled out by other passengers; Smith, Stretton and Dorset being on the line carrying people across, and Smith afterwards getting on to the up platform. He was sent to get water, and to fetch doctors.

Relief-man Ticehurst went out to stop the up train, whether of his own accord or by inspector Smith's orders is uncertain.

Porter Finch, who was at tea, hearing screaming, came out, saw the people on the line, and went at once to stop the up train.

Platelayer Dorset, seeing people on the line went across to the up platform, saw Smith, Easter, and Stretton on the line, and assisted in carrying people across.

Porter Slater, coming down from the top of the down-side stairs on hearing screaming, was sent by Smith to clear the top of the stairs, and to get police assistance. After this he was on the down platform assisting in restoring injured people.

Porter Goodwin was away from the station fetching tea, and on getting back was sent for water, and then for medical assistance.

Porter Bailey was away from the platform lighting the gas, but on coming down to the platform again saw people jumping on to the line, and Dorset, Easter, and Stretton getting them to go back again. He assisted them, not knowing of the crush upon the stairs, but was then sent by Mills to close the doors of the booking hall, and to clear the top of the up-side staircase, and after helping to do this he went down to the up platform by the up-side stairs, and carried up the body of a dead boy. On going down again he was sent for doctors.

Ganger Sibley, who was on duty on the line at the east end of the excursion platform, ran back to clear the people off the line, and found Dorset, Finch, and others doing the same. He then went to the foot of the stairs, and found servants of the Company and others engaged in removing people who had been injured, and gave assistance.

4. On this head I have no hesitation whatever in saying that the station, although no doubt sufficient for its purpose when the line was opened, is quite unfit, both as to its capacity and as to its arrangements, for the accommodation of the large crowds which now use it, if not habitually, yet at several stated periods of the year. It is right, however, to say that at the particular moment when this accident happened, the capacity of the station was not overtaxed, for a great portion of the platform was comparatively empty.

The entrance and exit both for the ordinary up platform, and for the excursion platform, being together at one end of the station is very unsatisfactory, and the arrangements at this entrance and exit staircase (both sides of which had on this occasion to be thrown open for an entrance) are such that they are very liable to become overcrowded, especially on the side nearest to the line and the booking hall, while the contraction of the outlet to the platform at the bottom by the ticket collector's box, is calculated to make any sudden downward rush of people a terrible danger. To the stairs themselves I do not take any objection, the steps being of a sufficient width and the risers not too high, and, although the iron banisters were fixed in an unsatisfactory manner, the feet not being counter-sunk and projecting in some cases over an inch, I do not think it probable, looking at the fact that the hand-rail overhangs the banisters, that in this case anyone tripped and fell over one of these projections, as has been suggested.

I have in conclusion to report that in my opinion this shocking accident was due :—

1st and principally, to the fact that the staircase was at the bottom obstructed by the ticket collector's box, and the outlet to the platform narrowed at one point by 13 inches.

2nd, to the absence of any means of regulating at the top of the stairs a crowd which, being composed largely of very young people, was sure to be an unruly one.

3rd, to the persistent refusal of those passengers who had reached the platform to make room at the foot of the stairs, by moving forward along the platform as they were requested to do, and to the want of a staff of policemen, or others, capable of making them do so.

4th, to the general unfitness of the station for the accommodation of large crowds of people.

It is only fair to state that the Company originally intended to erect the ticket collector's box against the wall at the back of the platform a short distance from the foot of the stairs, and that it was placed in its present position in consequence of a letter, addressed to the Board of Trade by a Mr. W. H. Prosser, pointing out the risk

of passengers being pushed off the platform on to the line, if the box were erected at the place first intended. The letter was forwarded to the Company, who stated that the plan would be modified to meet the objections raised, but no intimation was sent to the Board of Trade to state exactly what action had been taken, although Mr. Prosser wrote to the effect that he was satisfied, and that the obstructions had been removed.

It should also be remarked that, although representations have from time to time been made to the Company as to the necessity for improved accommodation, there is no record of any person having drawn attention to the danger of an accident due to the position of this ticket-collector's box, which is unfortunately not peculiar to this station.

The traffic in past years having been conducted under similar arrangements without accident, I think that the station-master and others responsible at Hampstead Heath station were justified in believing that the staff was sufficient, and in not making application for more assistance, but, while giving to all the servants of the Company credit for acting in the manner they thought best and for doing their utmost to assist under the circumstances when the accident occurred, and not forgetting that the emergency was sudden and unforeseen, and the position a most trying one, it is impossible to avoid the conclusion that the greater part of the work of extricating the injured and others from the crush at the foot of the stairs was done by passengers who were on the platform, and who in many instances behaved admirably, and that much valuable time was wasted by two or three servants of the Company going or being sent away to do what one could have done quite as well, which need not have been the case if there had happened to be on the spot one responsible man able to take command, and to give orders for carrying out the work of rescue in an organized manner. For this reason it was unfortunate that inspector Humphreys happened to be away for a few minutes on other duties, and it was also unfortunate that relief-man Easter, with the best intentions, should at that time have left the foot of the stairs to go on to the line, for it is quite possible that with the prompt removal of the first person who fell and caused the block, which an official on the spot might perhaps have effected, the eventual catastrophe might have been averted.

In conclusion, I would recommend the company to lose no time in providing at Hampstead Heath station, proper platforms and other accommodation for the large, and probably increasing crowds, who visit Hampstead Heath at stated periods in the year, and I would remark that at any rate there can be no difficulty in at once removing from the staircase the obstruction which was the principal cause of this disaster, in making arrangements for regulating the traffic at the entrance of the station, and in constructing within a reasonable time, a separate entrance and exit for the excursion platform, which should be widened. The employment, on future occasions, of some police to keep order upon the platform, would probably be found useful.

It is evident that with the present number of platform lines and trains, it cannot be hoped to keep the station clear when the people are beginning to flock homewards, say between 6 and 7 p.m. In that hour there were only two specials which would take 656 passengers, and six main line trains with a total carrying capacity of 2,478 passengers, which trains were certainly at least half full when they arrived at the station.

In the construction of stations it is important that, where the platforms are approached by staircases, or ramps, these should at no point be narrower than at the top, that the available width should in no case be contracted by any erection or fixed obstacle whatever below the top, and that at all stations where crowding may reasonably be expected, barriers for regulating the entrance of the crowd at the top, with sliding bars or gates, or collapsible gates, should be erected. If in any such cases there are gates at the bottom, there should be some means of communication between the top and the bottom, and in all cases such gates should be hung so as to open outwards.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

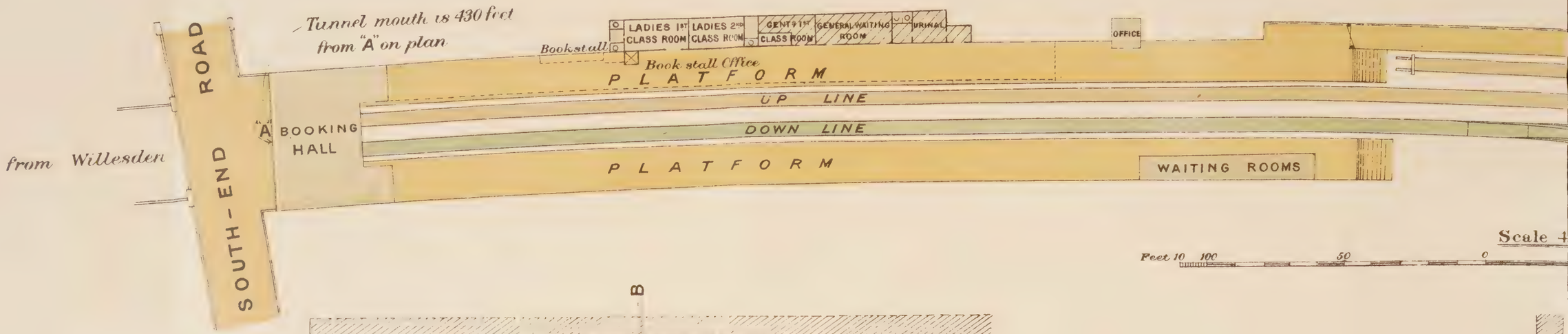
F. A. Marindin,
Major, R.E.

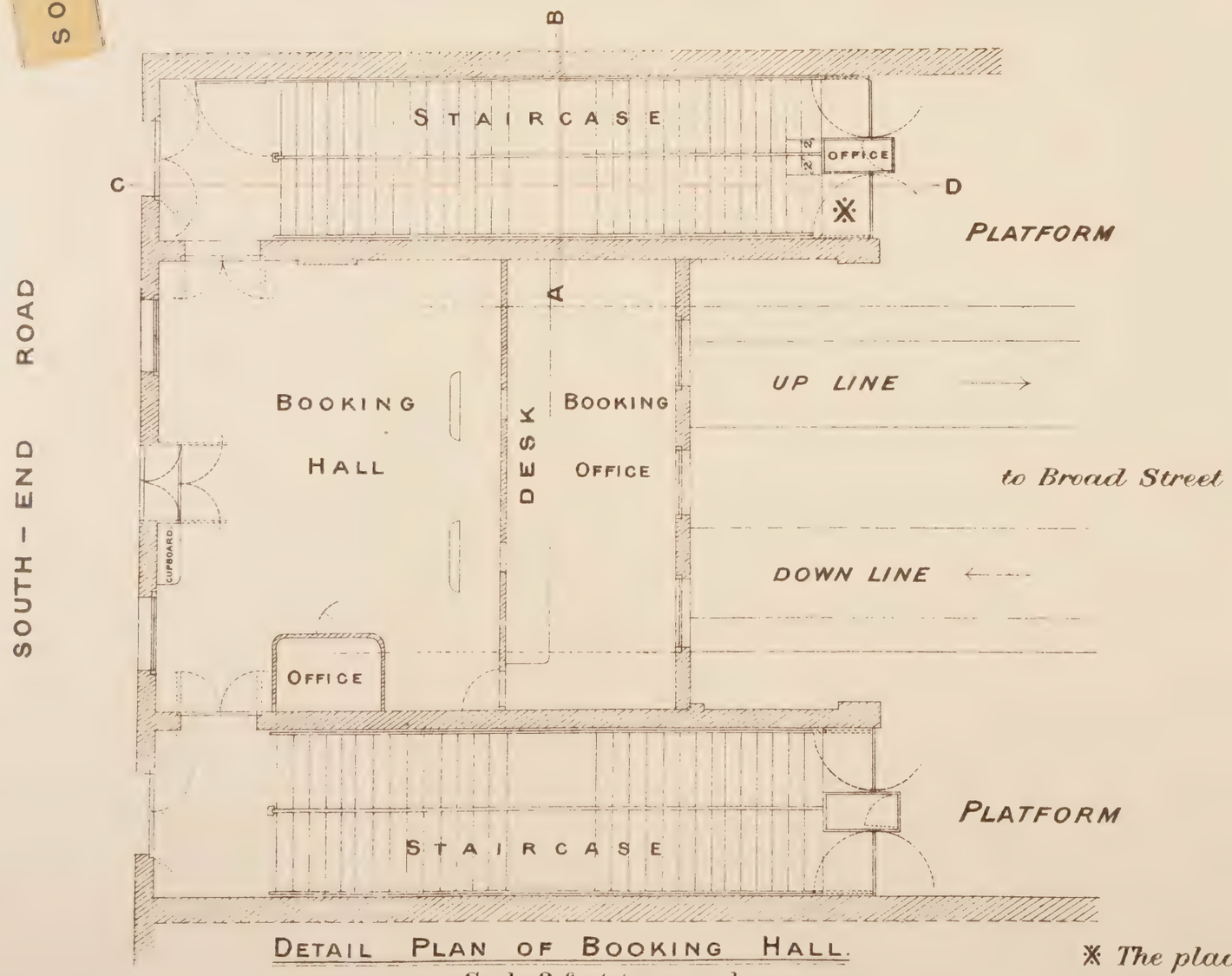
Note.—Since the preparation of this report I have ascertained that the ticket collector's box at the bottom of the staircase on the up platform has been removed, and that the Company are improving the station by constructing a separate approach to the up platform, with a separate booking hall at the top for the accommodation of the Bank Holiday traffic, and I am informed that these improvements are to be completed before Whit Monday.

L & N.W.R.

HAMPST

Plan of Booking Office etc, also





DETAIL PLAN OF BOOKING HALL.

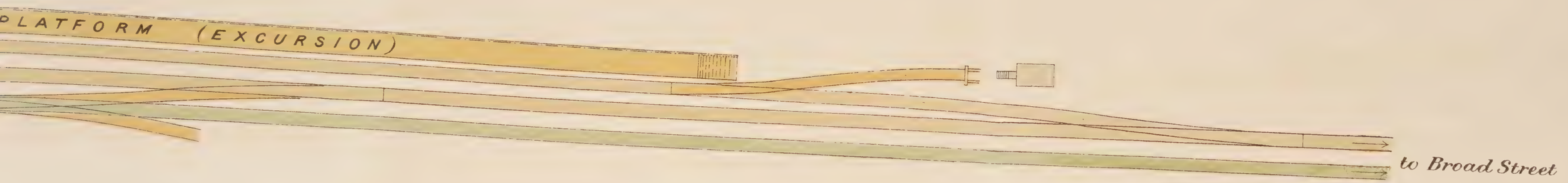
Scale, 8 feet to an inch.

Ins 12 5 10 20 30 40 Feet

※ *The place where the fatal Crush occured marked thus.*

EAD HEATH.

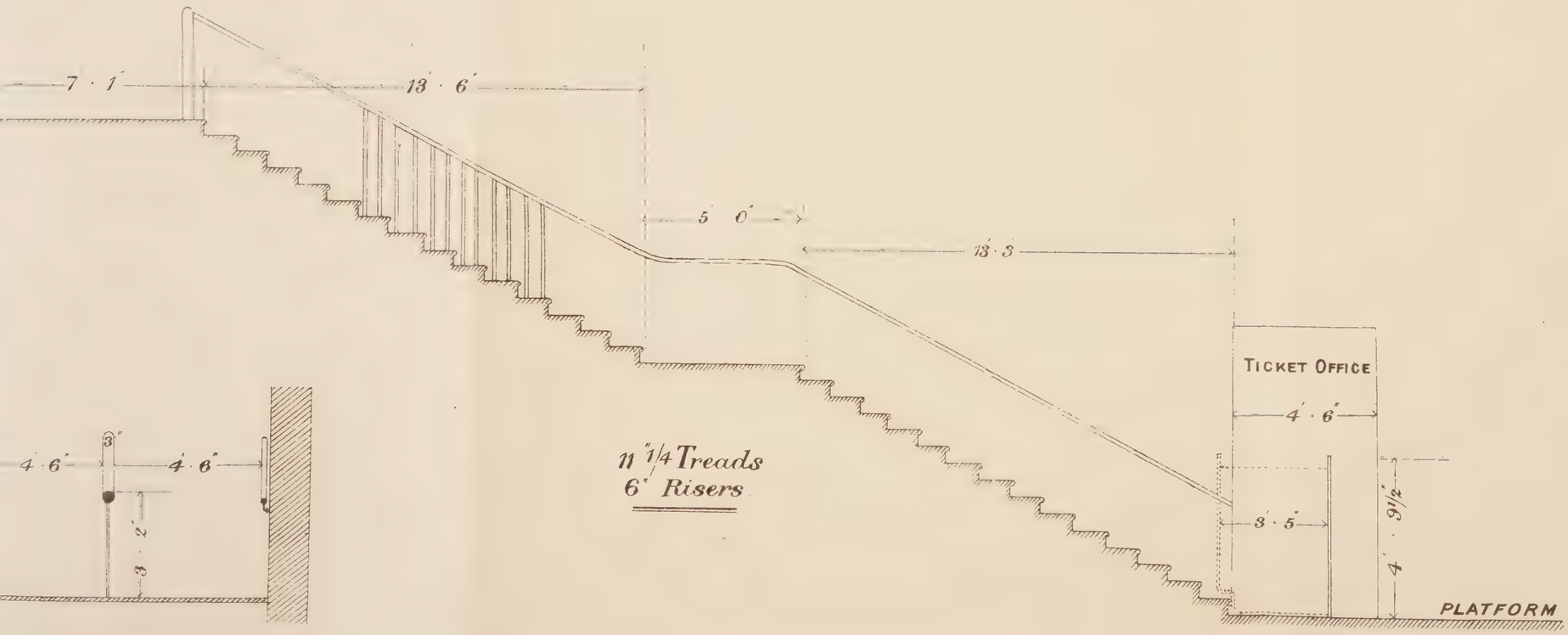
of approaches to Station platforms



) feet to an inch.

100 200 Feet

Folding doors



ECTION ON A. B.

SECTION ON C. D.

Scale 4 feet to an inch.

Ins 12 6 0 5 10 15 20 25 Feet

APPENDIX I.

List of Killed and Injured at Hampstead Heath, April 18th, 1892.

Killed.

1. John Connor, aged 9, 4, Little Randolph Street, Camden Town.
2. Annie Eaton (married), aged 40, 90, St. John's Street Road, Clerkenwell.
3. Susan Hamilton, aged 48, 69, Ely Terrace, Harford Street, Mile End.
4. Thomas Langford, aged 14, 101, Granville Road, Kilburn.
5. James Gorrie, aged 12, 67, Cromer Street, Gray's Inn Road.
6. James Ansell, aged 12, 1, Tankerton Street, Cromer Street, Gray's Inn Road.
7. Charles Holloway, aged 12, 90, Cromer Street, Gray's Inn Road.
8. Alfred Charles Lathey, aged 13, 89, Cromer Street, Gray's Inn Road.

Injured.

9. Water Jacomb, aged (?), 65, Culford Road, Kingsland.
10. Arthur Johnson, aged 33, 56, Copenhagen Street, Islington.
11. Annie Weatherley, aged 14, 2, North Avenue, North Street, Caledonian Road.
12. Edward Mowbray, aged 9, 23, City Buildings, Moor Lane, E.C.
13. Thomas Brown, aged 15, 16, Pleasant Row, Dock Head, Bermondsey.
14. Thomas Mowbray, aged 16, 23, City Buildings, Moor Lane, E.C.
15. Emily Smith, aged 5½, 18, Newton Street, Hoxton.
16. William Hicks, aged 15, 6, Medhoope Street, Cromer Street, Gray's Inn Road.
17. Stephen Eaton, aged 44, 90, St. John's Street Road, Clerkenwell.
18. Ada Pollett, aged 9, 90, St. John's Street Road, Clerkenwell.
19. Laban James Harding, aged 16, 27, White Street, Little Moorfields, E.C.
20. Elizabeth Hart, aged 26, 69, Ely Terrace, Harford Street, Mile End.
21. Patrick Ward, aged 52, 2, Princess Street, St. George-in-East.
22. Mrs. Elizabeth Prowse, aged (?), 40, Norfolk Street, Strand.

APPENDIX II.

List of Up Trains leaving Hampstead Heath Station between the Hours of 3.54 p.m. and 8 p.m. on the 18th April 1890.

Description of Train.	Arrival.	Departure.
	P.M.	P.M.
North London	3 52	3 54
Mansion House	4 3	4 8
North London	4 19	4 22
Empty North London Special *ex* Kew	4 32	4 35
Mansion House	4 46	4 49
North London	4 54	4 56
Mansion House	5 5	5 7
Hampstead Special (from excursion siding)	—	5 23
North London	5 23	5 28
Hampstead Special (from excursion siding)	—	5 36
Mansion House	5 39	5 43
Hampstead Special (from excursion siding)	—	5 59
North London	5 59	6 4
North London	6 17	6 20
Hampstead Special (from excursion siding)	—	6 26
Mansion House	6 26	6 30
North London	6 36	6 39
Mansion House	6 43	6 44
North London	6 52	6 53
Hampstead Special (from excursion siding)	—	6 56
North London	7 5	7 6
Hampstead Special (from excursion siding)	—	7 21
North London	7 20	7 24
Mansion House	7 30	7 34
North London	7 41	7 42
Hampstead Special (from excursion siding)	—	7 47

The following is the carrying capacity of the above trains, viz. :—

Mansion House trains	350 passengers.
North London, Kew, and Richmond trains	442 ,,
Special trains starting from Hampstead Heath	328 and 314 passengers.

Printed copies of the above Report were sent to the Company on the 10th June.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
July 20, 1892.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 28th May, the result of my enquiry into the circumstances attending a collision which occurred on the 27th May at Derby junction, Birmingham, on the London and North-Western Railway, my report having been delayed in consequence of the driver and fireman of one of the trains concerned having been so badly injured that I was not able to examine them until yesterday.

In this case the Birmingham and Wolverhampton portion of the 2.10 p.m. down London and North-Western train, which left Rugby at 4.11 p.m., 11 minutes late, and the 3.45 p.m., Midland train from Derby to Birmingham and Bristol, which had left Derby at 3.46 p.m., one minute late, approached Derby junction upon converging lines, and came into collision at 4.54 p.m., at the fouling point of the two down lines, when both trains were running at considerable speed.

The trains were made up as follows:—

The London and North-Western train.—Engine and tender, front brake-van, two composite, one third-class, and two composite carriages, and composite brake-carriage.

The Midland train.—Engine and tender, Great Northern horse-box, one bogie composite carriage, one brake-van, one composite carriage, one bogie third-class brake carriage, one composite, one third-class and one composite carriage, and rear brake-van.

The consequences of the collision were very serious. The right-hand leading end of the engine of the London and North-Western train struck the left side of the horse-box next to the Midland tender, driving it forward on to the tender, and breaking it up, the Midland engine and tender broke away from the train, and ran forward on the rails for about 200 yards, with the frame of the horse-box attached; the whole of the Midland train, except the rear brake-van, was thrown off the rails to the right, some of the vehicles on to the up London and North-Western line, and the whole of the London and North-Western train, except the rear brake-carriage and one pair of wheels of the vehicle in front of it, was thrown off to the left side, the engine, tender, and leading brake-van running for about 20 yards alongside the parapet wall of the Lawley Street viaduct, breaking down this parapet, and then falling over into a stable yard 29 feet below the level of the rails. The left leading end of the engine was the first part to strike the ground, and the engine then fell over on to its left side, the tender turned a complete somersault, landing with its proper leading end against the smoke-box of the engine and its trailing end towards Birmingham, and the brake-van fell upon its wheels behind, and at one side of the engine, with its body broken into splinters.

The London and North-Western driver and fireman, who went down in the cab of their engine, were very badly hurt, the driver having among other injuries a leg broken and two fingers of his left hand crushed, and the fireman having his left shoulder-blade broken in three places, besides being badly scalded; the front guard of the London and North-Western train, who went down in his van, was fatally injured and has since died; a groom who was in the horse-box next to the Midland tender was killed upon the spot, and a mare and foal who were in the box had to be destroyed, and 66 passengers, 24 in the Midland train, and 42 in the London and North-Western train, were injured, some of them seriously.

The damages to the rolling-stock, of which full particulars are given in the Appendix, were great, the horse-box at the front of the Midland train being broken to pieces, and the engine, tender, and front brake-van of the London and North-Western train being very badly damaged.

The permanent-way for distances of 176 yards on the down line, and 79 yards on the up line, was much damaged, 92 feet of the parapet wall were knocked down, and 287 feet of stone coping were displaced.

Details of these latter damages are given in an Appendix.

Description.

Derby junction, Birmingham, where the Midland line from Derby joins the London and North-Western line from Rugby, with trailing-points upon the down line, is situated nearly a mile east of New Street station.

The London and North-Western line, running from east to west, is level for over half a mile from Adderley Park north cabin to Derby junction, is straight for 818 yards, upon an 130-chain curve to the right for 96 yards, and upon an 80-chain curve to the right for 70 yards.

The Midland line, running from the north, approaches the junction upon a rising gradient, and upon a curve to the right, the gradients and curves for the distance of 1,843 yards from Saltley junction down home-signals to Derby junction cabin being as follows:—

Gradients rising.—1 in 275 for 98 yards; 1 in 192 for 696 yards; 1 in 88 for 710 yards; 1 in 158 for 249 yards; and 1 in 384 for 90 yards.

Curves, &c.—37½ chains radius to the left for 244 yards, straight for 137 yards; 36½ chains radius to the right for 215 yards; straight for 146 yards; 106 chains radius to the right for 100 yards; straight for 209 yards; 19½ chains radius to the right for 504 yards; straight for 156 yards; 105 chains radius to the left for 88 yards, and 14 chains radius to the right for 44 yards.

The Derby junction down home-signal for the London and North-Western Railway is the top arm on a bracket-post, situated upon the left side of the down London and North-Western line 82½ yards east of the junction signal-cabin. This post carries a down distant-signal arm for Grand junction cabin below the Derby junction down home-signal arm, and a disused arm upon a bracket.

The Derby junction down home-signal for the Midland Railway is the top arm on a double-armed post, situated on the right-hand side of the Midland up line, 134 yards east of the signal-cabin, the lower arm upon the same post being the down distant-signal for Grand junction cabin.

The Derby junction down distant-signal for the Midland Railway is on a single-armed post, situated on the left-hand side of the Midland line 868 yards from the signal-cabin.

There is an excellent view of the junction-signals from the engine of a London and North-Western down train, and a good view of the Derby junction down distant-signal from the engine of a Midland down train, but the view of the junction home-signal from an approaching engine on the Midland line is not so good as it should be. Owing to the sharp curve, and to the view being intercepted by a chimney stack, erected recently, the following is what is seen from an engine after first catching sight of these signals at a distance of 1,266 yards from the junction, viz., until reaching the distant-signal, and for 53 yards inside it, the junction home-signal for the Midland line appears to be on the left or the wrong side of the junction home-signal for the London and North-Western line; the Midland signal is then shut out by the chimney stack for 32 yards, when it again becomes visible, and the London and North-Western signal is hidden for 24 yards; both signals then become visible, but for 77 yards further the Midland signal appears on the wrong side of the London and North-Western signal; the two signals then come together, but 43 yards further on and for the remaining distance of 505 yards to the Midland home-signal, *i.e.*, from a point 639 yards from the junction, the junction-signals can be well seen in their proper relative positions, the Grand junction signals and the Proof House signals ahead being also in sight. For a distance of over a third of a mile the two lines are well within view of each other, the London and North-Western line being upon the higher level, and for the last 300 yards they run nearly parallel and quite close to each other.

The point of collision was at the fouling point of the two down lines, about 104 yards inside the Midland home-signal, and about 30 yards east of the junction signal-cabin, which is situated at the south side of the line opposite to the junction facing-points.

The signal-cabin, which contains 18 levers correctly interlocked, was erected about 23 years ago, and the signalling arrangements were altered about six years ago, but as there was no alteration in the connections with the main line the signalling arrangements were not submitted for inspection.

Absolute block working is in force in all directions from this cabin, the adjacent cabins being Grand junction cabin distant 238 yards westward, Gloucester junction

cabin distant 490 yards eastward on the London and North-Western line, and Duddeston Road cabin distant 1,300 yards on the Midland line.

Between Duddeston Road and Derby junction the Midland system of block working is in use, and the following are extracts from the rules :—

"16. *Section Clear and Station or Junction Blocked.*—When the line is clear to the home-signal, and it is necessary for a train to be allowed to approach a post cautiously, in consequence of an obstruction existing ahead of the home-signal, or from any other cause, the "Is line clear?" signals must not be acknowledged in accordance with clause 3, but the signal, "Section clear and station or junction blocked" (13 beats on the bell) must be given, and when this signal has been acknowledged, the proper "Train entering section" dial signal must be given and acknowledged, and the needle must be pegged to "Train on line." The signalman receiving such signal must, if the train has not already passed his box towards the starting or advanced starting signal, stop the train, and instruct the driver to proceed cautiously to the post from which the signal was received. In case the train has passed the box and been brought to a stand at the starting or advanced starting signal, the driver must understand that the lowering of the starting or advanced starting signal is an indication that the line is only clear to the home-signal at the post in advance, and that he must regulate the speed of his train in the same way as if he had been instructed to proceed under the "Section clear and station or junction blocked" signal. When some time is likely to elapse before the train for which the "Is line clear?" signals have been sent, will be ready to enter the section, the "Section clear and station or junction blocked" signal must not be acknowledged, but when the train is ready to enter the section, and before it is allowed to do so, the "Is line clear?" signals must be again sent so as to give the signalman at the post in advance an opportunity of receiving the train under clause 3, if the circumstances are so altered as to admit of his doing so."

"17. *Drivers to Obey Signals as if Block Telegraph was not in Operation.*—Drivers must act strictly in accordance with the Company's regulations as to the observance of signals, and be prepared to stop clear of any obstruction the signals may be exhibited to protect, precisely as if the block telegraph was not in operation."

Special rule in force at Duddeston Road :—

"*Duddeston Road and Derby Junction.*—When the signalman on duty at the Derby junction, Birmingham, gives permission for a train or engine to approach that junction from the Duddesdon Road signal-box cautiously, in accordance with clause 16 of the block telegraph regulations, the signalman at the Duddeston Road signal-box will exhibit a green hand-signal to the driver of such train or engine when passing the Duddeston Road signal-box, and drivers receiving this signal must run at reduced speed, and be prepared to bring their trains or engines to a stand where necessary."

Evidence taken on May 31st.

George Dale states: I have been about 17 years in the service of the London and North-Western Railway Company, and a signalman for the whole time; at Derby junction for 18 months. This signal-box contains 18 levers, and there is block working in all directions; under the ordinary rules in force on the London and North-Western Railway in the direction of Gloucester junction and New Street, and under the Midland rules in the direction of Saltley. The nearest block boxes are as follows:—Coventry side, Gloucester junction, distant about 500 yards; New Street side, Grand junction, distant about 238 yards; on the Midland Railway, Duddeston Road, distant about 1,200 yards. On the 27th instant I came on duty at 2 p.m. for eight hours. My down home-signal on the London and North-Western line is on a bracket-post on the left side of the line. One of the arms, that for the loop, is out of use, and the other one, for the main line, has below it the down distant from Grand junction, which is controlled by my home-signal, and also slotted from Proof House. The Midland down home-signal is on a post outside the Midland line, and it has a distant arm below it controlled by the upper arm. The following are the block-signals recorded for the 2.10 p.m. down express from London, and the 3.45 p.m. down express from Derby :—

	p.m.
The 2.10 p.m. train :—	
Offered from Gloucester junction and accepted	at 4.50
"Train on line" signal not used.	
Offered to Grand junction and accepted	„ 4.50
Arrived	„ 4.54
The 3.45 p.m. train :—	
Offered from Duddeston Road	at 4.52
Accepted (under Rule 16) "At caution"	„ 4.52
"Entering section" signal received	„ 4.52
Arrived	„ 4.54

I did not offer this train to Grand junction. I took my signals off, both home and distant signals, for the 2.10 train very soon after I accepted the train, certainly before 4.52. I did not lower my signal for the Midland train, and could not have done so owing to the interlocking. The last time this signal had been lowered was for a train from Walsall at about 4.31. It was put to danger after that train had passed. I saw this signal standing at danger when I lowered the signals for the London and North-Western train. It was standing at danger after the accident. I saw both trains approaching at about 4.54. The signals were off for the London and North-Western train to run forward into New Street. I saw the Grand junction signals and the Proof House signals off myself. These signals are, of course, common to

both London and North-Western and Midland trains. The London and North-Western train was running as nearly as I can guess at about 40 miles an hour, with steam on. The Midland train was running at from 30 to 35 miles an hour, in full steam apparently. To the best of my belief steam was not shut off upon either train, nor did the speed seem to be checked on either train before the collision took place. I cannot speak as to the brake upon the Midland train, but the brake upon the London and North-Western train was, I believe, applied near my down home-signal. The Midland train was a little in advance of the London and North-Western train, from 20 to 25 yards I should think. The two trains struck each other nearly opposite to my signal-box. The London and North-Western engine seemed to strike a horse-box which was next to the tender of the Midland engine, and then to crush the horse-box against the tender. The London and North-Western engine, which was running rather the faster of the two, then ran against the side of the Midland tender, and was then pushed off the line against the parapet. I think it then ran along the side of the parapet for a little distance, until it fell over into the yard below. Part of the London and North-Western train came to a stand on the Gloucester junction side of my box. I think some of the vehicles remained on the rails. Some of the Midland train, when this train came to a stand, was on the rails on the Duddeston Road side of my box. When I first saw the Midland train it was about opposite to the up advance-signal. At that time the London and North-Western train was rather farther off than the Midland train. When the Midland train had got to about half way from the up advance-signal to my box I "gave it up," and thought that it would run past the signal. That was the first time I was alarmed. It is quite a usual thing for Midland trains accepted at "Caution" to approach the junction at that speed. Owing to the rising gradient they are able to stop very quickly. The London and North-Western train, when I first took alarm, was still rather farther off than the Midland train. I went to the window of my box and threw up my arms to signal to the Midland driver, but he did not take any notice or acknowledge the signal or shut off steam. I then went and threw my down home-signal for the London and North-Western line to danger, but I cannot say whether the London and North-Western engine had then passed the signal or not. I think, however, that the continuous-brake was then applied. I cannot be sure whether or not when I lowered my Midland home-signal for the Walsall train at 4.31, the Grand junction down distant-signal arm was lowered. The interlocking in my box was examined by fitter William Seymour at about 6.20 p.m. It was found to be quite correct. Nothing had been done to it after the accident occurred. The window of my box was open when I signalled by holding up my arms. This signal would have been visible to both drivers. It was a clear, fine day. I heard no whistling from either engine. I have never before known a train to overrun the signals at this junction.

Charles Villiers Pollard states: I have been over 17 years in the service of the London and North-Western Railway Company as signalman, and at Grand junction box over 3½ years. On the 27th instant I came on duty at 2 p.m. for eight hours. At 4.50 p.m. I received from Derby junction the "Be ready" for the London and North-Western train due to pass my box at 4.43. I accepted it at once, and passed the "Be ready" to Proof House. The train was accepted at once. In about one minute or 1½ minutes the Proof House signals were lowered, and then I lowered mine in accordance with the rules. The Midland train, due to pass me at about 4.53, was never offered to me at all. The Walsall train was the last down train which had passed. I cannot remember whether or not my distant-signal was lowered for that train. The first intimation I had of the collision was from the levers in my box rattling. I looked out and saw the Midland engine on the viaduct. The Derby junction signals were then at danger. I had looked out just before for the London train, and saw that the signals at Derby junction were off for that train. At that time the Midland train was crossing Landor Street bridge. The signal on the Midland line was at danger. I was not at all alarmed, as the Midland train seemed to be running at the usual speed of a train having to stop at the junction home-signal.

Charles Wilson states: I have been nine years in the service of the London and North-Western Railway, and a signalman for nearly seven years; at Gloucester junction for about two years. On the 27th instant I came on duty at 2 p.m. for four hours. I work as a relief signalman in three boxes, my hours of work being 10 hours. The 2.10 p.m. down London and North-Western express was offered to me from Adderley Park north box at 4.49 p.m. I accepted it, and offered it to Derby junction at the same time. It was accepted at 4.49 p.m. I lowered my signals for it at once, and after I had booked the entry I turned round and saw the Derby junction down home-signal was off for the train. The distant-signal arm which is controlled by my home-signal was not lowered for two minutes later, but it was off when the train passed. This signal is slotted from the Grand junction box. The train is due to pass at 4.42, and actually passed at 4.53, running at about 40 miles an hour. When I saw the signal off for the London and North-Western train I saw also the signal on the Midland line at danger. I saw the Midland train running up the incline from Duddeston Road at about 20 miles an hour, I should think, or rather more, when it was crossing Landor Street bridge, which is nearly opposite Gloucester junction box. The London and North-Western train was then about passing Adderley Park north box. It was running very much faster than the Midland train. I thought the Midland train would stop all right at the home-signal as it was not coming at an unusual speed for a train having to stop. When the London and North-Western train was passing my box the Midland train was about passing the up starting-signal on the Midland line. I did not get alarmed until I saw that the Midland driver did not shut off steam when he was close to his home-signal at danger. The London and North-Western train was then about halfway between my box and Derby junction, and the Midland train was passing the home-signal for that line. It was not as far on as the home-signal for the London and North-Western Railway. I did not see the signalman at Derby junction come to his window and signal to the driver of either train. The London and North-Western signal was at danger when I looked at it next, but that was after the collision. I did not see it thrown up to danger.

Arthur Felix Abbott states: I am station-master at Adderley Park, and have been for 12 years in the service of the London and North-Western Railway Company. On the 27th instant I was on duty in the yard between the two signal-boxes when the 2.10 p.m. down express passed. There was nothing particular to call my attention to it. I was near Adderley Park north box when the signals were pulled off for the train, and I looked along the line and saw the signals were off ahead, including the signals for Derby junction. I could not see the signal for the Midland line. I always pay particular attention to the signals for this train as it is a fast express.

John Leadbetter states: I am a labourer employed in the signal department of the London and North-Western Railway Company, and have been in the service since October, 1891. On the 27th instant I was assisting a carpenter repairing Derby junction box when the collision took place. It was my duty to keep a look-out for signals so that there should be

no materials foul of the line. I saw the signals lowered for the London and North-Western train. I did not see them put to danger. I saw the Midland signal; it was at danger. I did not see the Midland train until the signalman called my attention to it. He said, "For God's sake look up; there will be a pitch in." I then saw the Midland train, which was just past the home-signal, running fast with steam on. The London and North-Western train was approaching, but had not quite reached the home-signal. It was running fast, but I cannot say whether steam was on or off. I was at the Gloucester junction end of the box. I do not know what the signalman did. He was at the window when he spoke to me. He shouted, and told me to shout. I did so and held up my arms. I do not know what else he did, as he no sooner spoke than the trains ran into each other. I did not see the London and North-Western signal thrown to danger. I went to give assistance to the passengers.

William Seymour states: I am a fitter in the signal department of the London and North-Western Railway. I inspected the locking in Derby junction-box at 6.30 p.m. on the 27th instant. It was quite correct in all respects. It was impossible to lower the down home-signal for the Midland line, and that for the London and North-Western Railway at the same time. I had last examined the box on the 5th May, and all was then correct. I could tell quite easily if the locking had been tampered with or altered in any way, and am sure that this frame had not been touched.

Henry Crandon states: I have been 17 years in the service of the Midland Railway Company, 16 years a signalman, and had been temporarily employed at Duddeston Road signal-box for about 10 days when the accident occurred. I was taking the duty of another man who was sick. I had several times before relieved the Duddeston Road signalman, and know the working quite well. On the 27th instant I came on duty at 2 p.m. for eight hours. There are 46 working levers in the box, and eight block instruments. We did not book trains, but only engines to and from the shed. I have an assistant. We work block all ways under the ordinary rules, the nearest block boxes being Saltley junction towards Derby, Brick Yard towards Camp Hill, and Derby junction towards Birmingham. There is an exception to the ordinary working between Duddeston Road and Derby junction in regard to the "Section clear but station or junction blocked" signal. Under clause 16 trains accepted under this rule have to be stopped and cautioned verbally, but by a printed regulation, of which I do not know the date, at this particular box trains so accepted are not stopped, but are to be shown a green flag. The 3.45 p.m. down express from Derby passed my box at about 4.53 by my clock. I took notice of the time because I had some engines to let out of the shed, and I thought the train was rather long in coming after I had received the signal for it from Saltley junction. It was running three minutes late. I received the "Train entering section" signal for it from Saltley junction at about 4.51, I think, but did not lower my out-of-door-signals for it until I had offered it to Derby junction, and it had been accepted by 13 beats under clause 16. When I did lower my home-signal the train was not more than 100 yards outside it. It was whistling for the signal. I lowered the signal, and then went to the window and showed a green flag. I held it out from the front of the box, but did not wave it. I did not see any acknowledgement of the signal given from the engine. Drivers usually acknowledge the signal either by touching their whistle or holding up their hands as they pass. I do not remember any previous case in which they have not done so. The engine was not running at above four or five miles an hour when it passed my box. I shouted out, but the driver did not look round. My starting-signal was off. I did not think of stopping the driver when he took no notice of my green flag by throwing that signal to danger. The Saltley junction signalman works to my signals, and Saltley sidings works to his, and Church Road crossing works to Saltley sidings signals. As my home-signal was at danger this train should have been, by the rule, checked at all these places, the speed being brought down to four miles an hour. The train was booked to stop at Saltley station. I did not notice what the fireman was doing when he passed my box. The driver was on the far side of the engine, looking forward for the signals.

William Joseph Haywood states: I have been nearly 10 years in the service of the Midland Railway Company, and a signalman for about 8½ years. On the 27th instant I was employed as assistant signalman at Duddeston Road box. I have been working there for about a year. The 3.45 express from Derby was accepted from Derby junction under clause 16. The home-signal was not lowered for it until the train was within about 50 or 100 yards of it, and I think the engine was whistling. The starting-signal was at danger. The signalman held a green flag out of the right-hand front corner of the box as the engine was approaching, and as it was passing he said "Right, ten," and I pulled off the starting-signal, which is worked by No. 10 lever. I did not notice the engine particularly, but it was not running fast. The signalman did not make any remark to me about the driver not having acknowledged the green flag. I am quite positive that the green flag was exhibited before the engine reached the box.

Albert Robinson states: I have been nearly 19 years in the service of the Midland Railway Company, and a signalman for 18 years at Saltley junction. On the 27th instant I came on duty at 2 p.m. for eight hours. The 3.45 p.m. train from Derby, due to stop at Saltley station at 4.46 p.m., was offered to me from Saltley sidings at 4.45, and accepted at once. I got the "Entering section" signal at 4.47, but I did not take off my distant-signal for it, because Duddeston Road distant-signal was at danger. I lowered my home-signal when the train had slowed down to enter the station. I offered the train to Duddeston Road at 4.45, and it was accepted. It arrived at Saltley station at 4.48, and left at 4.51. At that time the Duddeston Road distant and home signals were at danger. I did not see these signals lowered. I saw the train drawing slowly up to Duddeston Road box, and saw it passing that box. I did not see anything unusual. I did not see any green flag shown from the box. I did not notice any, and in the shade it could hardly be seen from my box.

Samuel Jeffrey Beard states: I have been 17 years in the service of the London and North-Western Railway, and a guard for 12 years. On the 27th instant I came on duty at Wolverhampton at about 7.40 a.m. to work the 8 a.m. train to London, due at 11 a.m., and the 2.10 p.m. down train to Wolverhampton, due at 5.16 p.m. I had left duty at 5.30 p.m. on the previous day. That was my daily duty for the week. I was in charge of the train after leaving Rugby on the return journey. We left Rugby at 4.11 p.m., 11 minutes late, owing to delay at Willesden, with a train consisting of engine and tender, brake-van, two composite carriages, one third-class and one composite carriages, and then two 42-ft. composites, the last one having a brake compartment, in which I was riding. The whole train was fitted with the automatic vacuum-brake, and the engine and tender with a steam-brake. The train was fairly full. I do not know much about the front part, the first four vehicles which were attached at Rugby, but the rear vehicles were well loaded. We left Coventry at 4.31, 12 minutes late. I looked out at Adderley Park till I could see the Derby junction distant-signal, and when I saw it was off I knew the road would be right into New Street, and I sat down on the left-hand side of the brake-compartment and

made out some reports. I did not see Derby junction home-signals. When my van was about opposite to the Lift sidings box, or near there, I felt the brake go on suddenly. At that time the engine would be approaching the home-signal. What flashed through my mind was that the driver was putting on the brake rather soon. He generally does so to check the train round the Curzon Street curve. I had not time to think much about it until I found myself thrown against the partition and then on to the floor. I jumped up, and looking out on the right side saw that the Midland train was locked with ours. I estimate our speed on passing Gloucester junction at 35 miles an hour. We had 20 inches of vacuum in both gauges when leaving Coventry. I did not look at the gauges again. When the driver applied the brake I think he did so full power, although I did not see or hear the valve in my brake-compartment fly open. The speed was reduced at the time I was thrown on the floor. The brake had got hold, but I do not think the speed had been much reduced until the collision occurred. When I looked out and saw the trains were locked together we were still moving forward at some speed. I got out on the left side before the train came to a stand. It ran forward from 10 to 15 yards after I got out. The tail of the train was close to the home-signal, I think. I found the last two vehicles were on the rails. I saw that the engine and tender and front brake-van had gone over the wall beyond the signal-box. I first helped out two or three passengers, and then went into the box. I said, "However has this happened? You have the road set for us, haven't you?" The signalman said, "Yes, I have accepted the Midland on the warning." I asked if he had accepted my train from New Street, and he said "No," but said he had given the obstruction-signal. I then went back and assisted the passengers. There were several passengers injured in my train. I did not see any of the Midland passengers. I did not go down to the engine. My assistant guard was in the front van, and he was so badly injured that he has since died. At first, on my making inquiries, I was informed that he was not much hurt. I hurt myself a little when I first jumped out.

Philip Bottrill states: I have been 21 years in the service of the Midland Railway Company, and a guard for about 18 years. On the 27th instant, I came on duty at York at 12.5 p.m. to take the 2.35 p.m. train to Bristol, due at 8 p.m. That was my day's work. I had left duty the day before at York at 3.5 p.m., after 7¼ hours' duty. When I left Derby at 3.46 p.m., one minute late, the train was made up as follows:—Engine and tender, one bogie composite, one brake-van, one composite, one bogie third-class brake, one composite, one third-class, one composite, and one brake-van. I was on the front brake-van, and there was another guard in the rear van. The whole train was fitted with the automatic vacuum-brake, and the engine and tender with a steam-brake. We attached a horse-box at Burton, next to the tender. It was fitted with the vacuum-brake. We left Tamworth at 4.25 p.m., two minutes late. The home-signal was off for us to run into Saltley station, where we stopped at 4.47. We started again at 4.50. The Saltley junction home-signal was off. I did not see it lowered, and cannot say if it was off when we entered the station. I did not see the Duddeston Road signals. I did not look for them. I did not notice being checked at Duddeston Road home-signal, but we ran past the box at a speed of about ten miles an hour. I did not see the signalman, nor see any signal shown from the box. I did not see the distant-signal from Derby junction. I saw the home-signal when I was only 20 or 30 yards from it. The train was then running at about 30 miles an hour. The signal was at danger, and my first impulse was to apply the brake, but hearing the London and North-Western train coming, I went to the near side to take in the situation of that train. It was then too late for me to act, as the train was too close upon us. The collision took place almost at once, the London and North-Western engine striking the horse-box in front of the bogie composite. I was knocked down and hurt. I cannot estimate how far the two trains ran forward after they came into collision. I think we were running at 30 miles an hour when the collision occurred, and the London and North-Western train was running rather faster. There were no passengers in the front compartments of the bogie composite. When we left Saltley, my vacuum-brake gauge was showing 20 inches. The brake was not applied at all before the collision took place, and then it went on. When we passed Duddeston Road, I thought by the speed we were travelling that we had been accepted at "Line clear." It was part of my duty to look out for signals when approaching a junction. Between Duddeston Road and Derby junction I was engaged in booking the time and in placing the luggage. After the collision I went forward as soon as possible to Grand junction box, and I then came back to attend to the passengers in my train. There were a good number of passengers, and some of them were injured, but I could not say how many. When I went across to look for the London and North-Western train, after seeing the signal for the line at danger, I saw the signal for the London and North-Western line still off. The engine of that train must then have been close to the signal. I could not see what the driver was doing or whether steam was on or off. I was not looking out when passing Duddeston Road box. I saw my driver at Burton. He was quite sober and fit for duty.

William King states: I have been 15 years in the service of the Midland Railway Company, and a guard for 11 years. On the 27th instant I came on duty at 7.40 a.m. to work the 8 a.m. train from Gloucester to Bristol; the 10.13 from Bristol to Derby, due at 2.45; and the 3.45 from Derby to Birmingham, due at 4.55, and the 5.40 from Birmingham to Gloucester, due at 8.1 p.m. That is my day's duty. I had left duty at 5.20 the previous day after about 10 hours' duty. I was riding in the rear van after leaving Derby. I saw no signals at all after leaving Saltley. I was busy in the van at other work. I think we passed Duddeston Road at a speed of about 10 miles an hour. I did not see the signalman there, nor any signal shown from the box. I was not looking out. The first thing which called my attention to anything being wrong was the train stopping very rough. I got out and found what had happened. I was shaken a little. I went to assist the passengers. I cannot estimate what was the speed when the collision took place. My van was the only vehicle in my train which remained on the rails, except the engine and tender. I did not see my driver at all.

Thomas Edwin Fear states: I have been 23 years in the service of the Midland Railway Company, and a driver for 17 years. I have been driving regularly between Derby and Birmingham for the last two years, and I know the signals well. On the 27th instant I came on duty at 8.10 a.m. to work the 9.10 a.m. train from Bristol to Derby, due at 12.45, and the 3.45 p.m. train from Derby to Bristol, due at 8 p.m. I had not been on duty the day before. My engine is No. 1,282. It is a six-wheeled engine, with driving and trailing wheels coupled, and it has a six-wheeled tender. It is fitted with a steam-brake, working-blocks on the coupled engine wheels and the tender wheels, and also with the apparatus for working the automatic vacuum-brake, the two brakes being applied by the same handle. I left Derby about one minute late, and after taking on a horse-box at Burton, we had nine vehicles on, equal to 10½. The brake was on all the vehicles I think. Approaching Saltley the Church Road distant was on, but the home was lowered; the Saltley sidings distant was on, but the home was lowered almost as

soon as I sighted it. I never used the brake at all. The Saltley junction distant was on, but the home was lowered nearly as soon as I sighted it. I stopped at the platform, and the signal for me at the Birmingham end of the station was off before I stopped. After starting from Saltley station I passed Saltley junction home signal, which was off. Saltley junction starting-signal was off. Duddeston Road distant was off when we left Saltley station, and the home also was off. I passed Duddeston Road box at about 10 to 15 miles an hour, and the starting-signal was off. I did not see it lowered, but it was off when I first sighted it, which was before I reached the box. When passing the box I was on the right-hand side of the foot-plate. I saw the box when approaching it, but not after passing the home-signal. I got no signal from the box. There was none shown when I last saw the box. The Derby junction distant-signal was at danger, and I passed it at danger. Just after passing the distant-signal, at a speed of about 15 miles an hour, I looked across for the home-signal. I saw it was off. I said to my mate that the signals were all off, and that he had better put a bit more coal on. By that time we were up past the home-signal, and when we were passing the junction I saw the signalman putting his hands up. I put the brake on immediately and shut off steam. I was running with 20 inches of vacuum, and I put the brake on full power. It acted well. Before I had time to do anything more the London and North-Western engine was into my train. It struck the horse-box first. I do not think that the London and North-Western engine struck my engine or tender at all. The engine and tender, and the frame of the horse-box broke away from the remainder of the train and ran forward for about 50 yards, and then came to a stand. The London and North-Western engine went over the viaduct nearer to the box than where I stopped. The signals ahead were all off for running into New Street station. I was some distance inside the Derby junction distant-signal when I saw the home-signal first. I think I was getting on for half way between the two. I did not see how the London and North-Western signal was standing, and I did not keep my eye upon my signal. I cannot say that I have ever noticed that when approaching Derby junction the Midland signal and the London and North-Western signal cross each other. I know that the London and North-Western signal is a bracket-signal, and ours is not. I did not see the London and North-Western train at all as we were approaching the junction.

George Baker states: I have been 10 years in the service of the Midland Railway Company, and a fireman between four and five years. On the 27th instant I was fireman with driver Fear. I have been with him since November 1891, and know the line and signals at Birmingham fairly well. I do not remember how on that day the signals outside Saltley were standing. We stopped at Saltley station. I think the Saltley junction home-signal was off for us before we stopped. After coming through the bridge the Duddeston Road home-signals became visible. To the best of my belief the right-hand home-signal at Duddeston Road, which is the proper signal for us, was off when we came under the bridge at Saltley; I would not like to swear to it, but I feel convinced that it was. I cannot remember how the Duddeston Road distant-signal was standing. I was riding on the left-hand side of the foot-plate. I was looking at the signal-box as we approached it. I did not see any green flag shown from the box. I do not see how a green flag could have been shown without my seeing it, unless it was after we had passed. We had not checked after starting from Saltley, and had no cause to do so. I should think we passed the box at a speed of about 10 miles an hour. The Derby junction distant-signal was at danger as we approached it, and as we passed it. I did not see the home-signal at all. Just after passing the distant-signal my mate told me to put some more coal on as we would have to work the engine heavily in going out of New Street on the other side. He told me the signals were off for us to run into New Street. I was engaged all the way to the junction, and I did not see the junction-signals, or the London and North-Western train, until my mate shut off steam and applied the brake. The Derby junction distant-signal is very seldom off; indeed I do not remember ever having seen it off.

Evidence taken on July 19*th.*

Thomas Hodson states: I have been about 25 years in the service of the London and North-Western Railway Company, and a driver for about 18 years. On the 27th May I came on duty at Bushbury at 7 a.m. I had to take the 8 a.m. train from Wolverhampton to London, due at 11 a.m., and to bring back the 12.30 train from Euston to Rugby, due at 2.57, and then the 4 p.m. train from Rugby to Birmingham and Wolverhampton, due at 5.15. My day's work would then be finished. I had not been on duty the previous day. Between 11 a.m. and 12.30 p.m. I had to take my engine to Camden Town for coal and water. My engine, No. 790, is a six-wheeled engine with driving and trailing wheels coupled and radial-axle wheels in front, and a six-wheeled tender. It is fitted with a steam-brake, working blocks on the coupled engine wheels and the tender wheels, and also with the apparatus for working the automatic vacuum-brake on the train. These two brakes are applied by the same handle and they work automatically together. The 4 p.m. train consisted of seven vehicles, equal to eight, and the automatic vacuum-brake was working throughout the train. It was in good order. We left Rugby nine or 10 minutes late, and the only stop was at Coventry, where the continuous-brake was used to stop the train. We left Coventry 11 minutes late, and the signals were right for me the whole way. The Derby junction signals, and those ahead at Grand junction and Proof House, were all off for me as I approached Derby junction. I saw none of them thrown to danger in my face. I saw the Derby junction home-signal was off as I came below it. If this signal was thrown to danger it must have been after I had passed it. I was running at my usual speed from Gloucester junction, but not over 25 miles an hour, I should think. I shut off steam when at the north end of Adderley Park station, and did not apply it again. When a little outside Derby junction home-signal, not above half-a-dozen yards outside, my mate, who was riding on the right-hand side of the foot-plate, said, "I think the Midland man is going a little bit too far." I at once applied my brake full power, without going across to look at the Midland train, and I also opened the sand-pipes. I had not run over 40 yards further before I struck the side of the Midland train. The right leading end of my engine struck a horse-box which was next to the tender of the Midland engine. My engine almost immediately left the rails and soon afterwards ran against the parapet on the left side of the line. After running along this for 15 or 20 yards it fell over into the yard below. I had hold of the reversing lever and remained inside the cab until the engine struck the ground. The left leading end was the first to strike the ground, and then the engine fell over nearly on its side. I and my fireman then both crawled out. The first man who came up went away after asking where my guard was, and then another man came up and assisted me. My leg was broken in two places, and I have lost two fingers of my left hand, and I was otherwise injured. I have been out of hospital now for three weeks, but am still in doctors' hands. My fireman was badly scalded. Until my fireman spoke I had not seen the Midland train at all, as I never went over to his side. I have

often seen Midland trains coming up to the junction with steam on until within 20 or 25 yards of the home-signal at danger. I have often made a remark about it to other drivers.

Edwin Leary states: I have been 14 years in the service of the London and North-Western Railway Company, and a regular fireman for 10 years. On the 27th May I was fireman with driver Hodson. I have heard his evidence read over, and it is correct. I did not see the Midland train at all until just before I spoke to my driver. When we came to Adderley Park north I had a look at the Gloucester junction signals, the Derby junction signals, and the Grand junction signals. They were all off, so I then went to sweep up the foot-plate. I was then just passing Gloucester junction. I had not looked up again until we were near Derby junction home-signal, and then I saw the Midland train. The Midland engine had steam on, and I was afraid it was not going to stop, so I told my driver, and he applied the brake and reversed the engine. I did not notice the Midland signal. I was very badly scalded, and my left scapular bone was broken in three places. I was in hospital for three weeks and a day, and am still under treatment. If I had not been sweeping up the foot-plate I would no doubt have seen the Midland train. I could not have helped doing so. It is difficult for me to say whether, if I had seen the train sooner, I would have been apprehensive that it would run past the signal and foul of the junction. If I had thought so, of course I would have spoken to my driver. When I first saw it the engine was past the signal and coming on to our up line. I have often seen Midland trains coming up close to the signal with steam on.

Conclusion.

The facts disclosed by the foregoing evidence show that this disastrous collision was one of a class for which, considering the modern appliances for safe working, there can be no possible excuse.

At 4.50 p.m. the London and North-Western train was accepted at Derby junction signal-cabin, with the "Line clear" signal, and the signals were lowered for it shortly before 4.52 p.m., at which time the Midland train was offered from Duddeston Road, and was accepted under the "Section clear but station or junction blocked" signal, or (shortly) the caution-signal.

The London and North-Western train, running 11 minutes late, passed Gloucester junction signal-cabin, 490 yards east of Derby junction, at 4.53 p.m., running at its usual speed, estimated variously at from 40 to 25 miles an hour, with all signals off for it and visible to the driver, at Gloucester junction, and Derby junction, and at Grand junction and Proof House, the signal-cabins between Derby junction and New Street station.

The Midland train, running three or four minutes late, stopped at Saltley station at 4.48 p.m., started again at 4.51 p.m., and passed Duddeston Road signal-cabin, 1,300 yards from Derby junction, at, probably, rather before 4.52 p.m., although as the time is not booked in that cabin this is uncertain.

At the time that the London and North-Western train was passing Gloucester junction cabin, on the London and North-Western line, the Midland train was running up the incline to Derby junction at a speed something less than that of the London and North-Western train, and had reached a point between 300 and 400 yards from the junction. From this point the two converging lines are very nearly parallel and are quite close to each other, and yet neither the driver nor the fireman of either train saw the other train, until just before the London and North-Western train overtook the Midland train, and the right-hand leading end of the London and North-Western engine struck the left side of the horse-box next to the Midland tender, with the result recorded above.

Just before the collision occurred, or when the Midland engine was, according to the signalman's estimate, about 150 yards from the point of collision, the signalman in Derby junction-cabin became alarmed, and states that he went to the window and held up his arms to warn the Midland driver, but the driver did not see this hand-signal until he was some way inside the junction home-signal, and actually on the junction, so that, although the driver, as he states, shut off steam and applied his brakes, the speed of the Midland train was hardly checked at all before the collision took place. Nor was the speed of the London and North-Western train much reduced, for, although the driver, who had previously shut off steam, applied the continuous-brake and reversed his engine directly he was told by his fireman that the Midland train was running too far, he was then within 40 yards of the fouling-point of the two lines, and the brake had very little time in which to act.

The signalman states that after signalling to the Midland driver he went and threw up his home-signal for the London and North-Western line, and signalled to the London and North-Western driver to stop, but if he did so it must have been after the London and North-Western engine had passed the home-signal, and after the driver had taken action as above stated. The speed of the two trains, therefore, at the time they collided must have been nearly 30 miles an hour, and, under these circumstances,

and considering the surroundings of the place, and the fact that the London and North-Western engine, tender, and leading brake-van fell over the edge of a viaduct 29 feet high, it was most providential that there was not a greater loss of life, as there would almost certainly have been if the passenger carriages at the front of the London and North-Western train had not been prevented by the action of the automatic vacuum-brake from following the engine, tender, and front brake-van when they fell.

As to the above facts the evidence is clear, and there can be no manner of doubt that the signals were all off for the London and North-Western train, and that the junction home and distant signals for the Midland line at Derby junction were standing at danger.

There is, however, considerable discrepancy in the evidence as to the position of the signals at Duddeston Road, and as to the cautioning of the driver of the Midland train at that signal cabin. The driver states, and he is supported by his fireman, that the Duddeston Road distant-signal was off before he started from Saltley station, that the home-signal was off as soon as he sighted it just after starting from Saltley station, and that he saw the starting-signal off as soon as it came within view, some distance before he reached the home-signal. He and his fireman also deny that any green flag was shown from Duddeston Road cabin, which, according to their estimate, and that of the two guards of the train, they passed at a speed of 10 to 15 miles an hour. On the other hand the signalman at Duddeston Road and his assistant agree in their statements that the home-signal was not lowered until the engine was within 100 yards of it, and the speed of the train had been reduced, and that the starting-signal was not lowered until a green flag had been shown to the driver. The signalman further states that the speed of the train when passing the cabin was only four or five miles an hour, and his assistant says that the train was not running fast, while they both think that the engine when it was approaching was whistling for the home-signal to be lowered. It is impossible to reconcile these conflicting statements, but it is worthy of notice that the signalman admits that he received from the driver no acknowledgement of the caution-signal, and that he does not remember any previous instance of the kind.

The statement of the signalman in Saltley junction cabin supports that of the Duddeston Road men as to the position of the Duddeston Road signals when the train started fram Saltley station, and is adverse to that of the driver, but this signalman did not see the green flag shown from the Duddeston Road signal-cabin, and no one can be produced who did see it. The Saltley junction signalman thinks that he could not have seen the green flag in the shade, although his cabin is only 400 yards from Duddeston Road, but it has been ascertained that when the train was running between the two cabins, the flag would have been hidden by it from anyone in the Saltley junction cabin.

Under these circumstances, although I am not fully convinced that the caution-signal was properly exhibited at Duddeston Road, I consider that on the whole the balance of evidence is in favour of the signalman. However this may have been it is admitted that the Derby junction distant-signal was at danger when the train passed it, and, while the driver states that the home-signal, which he sighted first after passing the distant-signal, was off for him, he does not deny that he never looked at it again until he reached the junction.

The two guards state that they did not look for the signals at all, and the fireman, who, by order of his driver, was putting on coal, saw neither the signals nor the London and North-Western train, which was approaching on his side of the engine.

Had this collision not occurred it would hardly have been believed that, even if there had been no signals at all, or if the signals had been out of order and had been off for both trains, two drivers could have run at full speed up to the actual junction of the lines upon which they were running, in broad daylight, and with the converging lines clearly visible the one from the other; and, although I hold the driver of the London and North-Western train free from blame, as he was attending to the signals, all of which were off for him, and he was riding on the far side of the foot-plate from the Midland line, I think that, even with the knowledge that all the signals were off for his train, it would have been wiser and more strictly in accordance with the rules if the London and North-Western fireman had been keeping a look out, instead of sweeping up his foot-plate.

The fireman of the Midland engine, who unfortunately was, of the two men on the engine, the one in the better position for seeing the London and North-Western train, may be exonerated from blame, because he was obeying the orders of his driver in putting on coals instead of keeping a look-out in accordance with Rules Nos. 268 and 284, but for the conduct of the driver, and of the two guards, either of whom, it

must be observed, had it in his power to stop the train by the application of the continuous brake, I can find little excuse.

The driver, I have no doubt, mistook the signal for the London and North-Western line for the signal for the Midland line when he first sighted it, and, seeing all the signals ahead at Grand junction and Proof House in an all right position, took it for granted that the line was clear for him to run on into New Street station.

For his first mistake it may be said in extenuation that the home-signals, when first sighted, and up to a point 239 yards inside the distant-signal, cross each other, so that the Midland signal appears on the wrong side of the London and North-Western signal, but he was, or ought to have been, quite aware of this, and the signals are from their grouping easily distinguishable, while for the last 500 yards before reaching the junction they are as plain as signals can be. If the driver were cautioned properly at Duddeston Road, his conduct is inexplicable, but he may be credited with at any rate having missed seeing the green flag signal, if shown.

The guards, as is I fear too often the case, utterly ignored the rule that they are to keep a good look-out, and they must bear their share of responsibility for the collision, which they might have averted if they had been attending to their duties.

The signalman in Derby junction cabin can hardly be blamed, for it is clearly the habit of Midland drivers to run at considerable speed up the incline, and to pull up short at the home-signal; but still I think that a smart signalman would have taken alarm sooner than this man did, and would have thrown up the London and North-Western signal, in time, possibly, to stop the London and North-Western train short of the point of collision.

The signalman in Duddeston Road cabin, crediting him with having given the caution signal, would have shown better judgment if he had pulled up the Midland train at his starting-signal when the driver passed without acknowledging the caution-signal.

While, however, I hold the following men responsible for the accident, viz.:—*First and principally*, driver T. E. Fear, who had at the time been on duty for $8\frac{1}{2}$ hours; *secondly*, guard Phillip Bottrill, who had at the time been on duty for $4\frac{3}{4}$ hours; *thirdly*, guard William King, who had at the time been on duty for $9\frac{1}{4}$ hours, I consider that it was due in a great measure to a faulty mode of working.

Judging from what has happened upon the Midland Railway upon this, and other recent occasions, at Barnt Green junction and Esholt junction for instance, and upon several occasions upon other railways, it is clear that the objection which has been raised by the inspecting officers of railways to the too common use of the "Section clear, but station or junction blocked" signal is well founded, and, while I am strongly of opinion that its use should be confined to stations at which it is necessary for one train to run in close behind another for purposes of connection, I consider that it is inexcusable to relax in any degree the ordinary rules under which it is worked. It is therefore to be hoped that if there are any other signal-cabins at which, like Duddeston Road, the rule that drivers are to be verbally cautioned is not enforced, and where safety depends to a great extent upon the driver observing a green flag-signal, possibly shown only just as he is passing the cabin, the practice at these places may *at once* be altered.

I recommend that the position of the junction home-signals at Derby junction may be altered so that these signals do not cross, and I would strongly urge the Midland and other railway companies to abandon as soon as possible the use of the "Caution" signal, except at stations where trains have to connect, or under very special circumstances, under special precautions, such, for instance, as the giving of a ticket to ensure that a driver is properly cautioned. Where the traffic is very heavy, the difficulty of carrying it on without the use of this signal could almost always be met by the erection of additional block signal-cabins within a short distance of the junction or station.

I have, &c.,

F. A. Marindin,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Particuars of Damage to Midland Engine and Rolling Stock.

Midland engine No. 1282.—Tender tank back-plate and frame broken; tender tank hand-rail broken; tender left-hand buffer broken; tender draw-bar bent; tender automatic vacuum pipe broken.

Great Northern Railway horse-box No. 1162.—Completely broken up.

Midland bogie composite No. 402.—One head-stock, six door-panels, seven side-panels, eight axle-boxes, one axle-box face-plate, three door-handles, four quarter-lights, two door-lights, and one door-hinge broken; eight elliptical springs broken and displaced; step-boards and irons torn off one side; suspending irons bent and broken; one bogie-head-stock, four bogie check-chains, one drawbar-hook, one automatic vacuum hose-pipe, one screw coupling, one friction-casting, and one drawbar face-plate broken; one bogie shifted two inches and the other shifted three inches; four door-handles and two commode-handles bent; three commode-handles torn off and several other minor damages.

Midland passenger van 129 had three axle-boxes, two door-panels, two side-panels, two step-boards, one projection, and four step-irons broken; one lamp-iron torn off; four step-irons, three door-handles, and four commode-rails bent; end and side moulding and cornice damaged; flanges of wheels jagged.

Midland composite 54 had two long step-boards two end-panels, three door-panels, four side-panels, one axle-box, and four step-irons broken; five step-irons, for door-handles, and four commode-handles bent; one commode-handle torn off; gas gauge broken, and side-cornice damaged.

Midland bogie third brake 1703 had two long step-boards and one axle-box broken; two step-boards damaged; 13 step-irons, three door-handles, two commode-handles, and one lamp-iron bent; side-cornice and moulding damaged; wheel flanges jagged.

Midland lavatory composite 465 had two side-panels, one long step-board, roof and cornice and one quarter-light, one axle-box, and one step-iron broken; three door-handles, four commode-handles, and nine step-irons bent; wheel flanges jagged.

Midland third-class 890 had two long step-boards, two side-panels, two door-panels, window moulding, six step-irons, and eight communication cord-rings broken; two step-irons, three door-handles, one commode-handle, and one lamp-iron bent; one headstock end slightly damaged; one headstock grazed.

Midland composite 893 had two short step-boards, door moulding and three communication cord-rings broken; one door-handle, one commode-handle, two buffer-rods, five step-irons, and two coupling-shackles bent.

Particulars of Damage to London and North-Western Engine No. 790.

Boiler.—Smoke-box tube-plates indented; left centre barrel-plate also indented; steam pipe-stand broken; regulator box broken; smoke-box badly damaged; plates of no further use; door and all connections broken; blast-pipe and petticoat broken; chimney broken; hand-rail bracket damaged; lagging-plates, off-barrel, scrap, also dome-shell. All angle-irons for lagging damaged.

Firebox.—Mud-plug on left side knocked off level; wheel off right-hand clack-box broken; water-gauges and cocks damaged; steady bracket broken; brackets for sand-box shaft broken, and shaft damaged; 12 studs broken off back of fire-box.

Tubes.—24 indented in smoke-box end.

Cylinders.—Front flanges broken; all cocks broken off; eight studs broken; also brass unions for lubricator, oil-cups, cylinder cock-shaft, dust-plate, hopper and plates, both front-covers and steam chest-cover.

Valves.—Buckles want examining and refitting.

Valve motion.—Slightly damaged, requires overhauling; slide-bars, blocks and crossheads want refitting.

Eccentrics.—Sent to fitting shop for examination.

Reversing gear.—Screw, wheel, and bracket broken; rod damaged.

Pistons.—Require examination.

Connecting-rods.—Slightly damaged; want examining and refitting.

Coupling-rods.—Both badly bent.

Axle-boxes.—Leading, one broken and the other slightly damaged; driving, both slightly damaged; trailing, both slightly damaged.

Hornblocks.—Leading, want refitting; cross-stays broken; driving, want refitting; trailing, want refitting.

Wheels.—Leading, axle bent; wheels 3¾ inches out; driving, wheels slightly bent; crank bent half an inch; scrap; trailing, left, four spokes broken; wheels three inches out, twisted.

Regulator.—Lubricator behind chimney broken.

Injectors.—slightly damaged; feed-pipes destroyed.

Springs.—Leading, one buckle displaced; one spring pin-guide broken; driving, double spiral; damaged; several broken; trailing, double spiral; damaged; several broken.

Steam-brake.—Cylinder wants examining and re-fitting; hangers and blocks damaged; cross-beam broken; adjusting-rod bent; pendulum and six levers, also fork and rod bent.

Automatic vacuum-brake.—3-in. exhaust pipe on each side scrap; hand-rails badly damaged; blower broken; C.I. box for double-back valve broken; air-pump wants re-fitting; driver's valve and all pipes require thorough overhaul; four 2-in. vacuum pipes and C.I. tee, scrap; exhaust in ash-pan damaged.

Cab.—Cab and mountings and handrail panel-plates badly damaged; one splasher completely broken up.

Frames.—Both frames and leading-horns bent, besides other damage; left outside framing, scrap; right outside framing damaged, but may be repaired; C.I. trailing footplate broken.

Gauges.—Pressure and vacuum-gauge damaged; whistle-stand, scrap; sand-boxes damaged badly, and pipes all broken.

Couplings.—Screw-coupling, for Gedge's hook, broken, also footplate side-links.

Lubricators.—Wilson's double S.F. lubricator, "the Parel" sent to makers for repairs.

Buffer-plank.—Scrap; plate bent.

Buffers.—Damaged; also angle irons.

Damper.—Gear and damper door badly damaged; scrap.

Ash-pan.—Damaged and bulged.

One name and one number plate, scrap.

Tender attached to London and North-Western Engine 790.

Tank is so badly damaged that it will have to be taken to pieces. Some of the plates will come in again after they are levelled, but the back plates and arm plates will have to be new.

The frame is irrepairable, and the axle of one pair of wheels is badly bent.

The following materials are also damaged beyond repair:—Two horn blocks, one horn plate, one intermediate buffer, complete, one back-spring buffer, two brake shaft hangers, two cast-iron foot steps, one dip-pipe scoop, one vacuum "T" pipe, two vacuum hose-pipes, one crosshead, four tank-handles, two rope hooks, two feed pipes, one pair feed-pipe stays, one foot-plate, one brake box-wheel, two side-panels, one brass cullender, four axle-boxes, new class, and 12 one-inch studs.

Damages to London and North-Western Carriage Stock.

No. 37, Brake-van.—Roof, sides, and ends of body badly damaged. (This was the vehicle which fell over the bridge.)

No. 1,258, Composite.—One end badly damaged, six side-panels on each side; three continuous step-boards damaged; two buffers bent; an axle-box broken.

No. 806, Composite.—One end badly damaged; three side-panels on each side; two continuous step-boards damaged; two buffers bent; two axle-boxes broken.

No. 644, Third.—Two buffers bent; all door handles on one side damaged.

No. 1,259, Composite.—All side-panels on one side grazed; handles and step-boards damaged.

No. 788, Composite.—All side-panels on one side grazed; handles and step-boards damaged.

No. 215, Third.—Two buffers bent; three door-handles bent; two step boards damaged.

DAMAGE TO PERMANENT-WAY.

The permanent-way was very much damaged, especially at and for some distance north of the junction. Both the trailing and facing leads had practically to be relaid. The damage extended for a distance of 176 lineal yards on the down line, and 79 yards on the up line (including portions of the junction). The following materials were either broken or damaged so as to necessitate their removal from the road.

Point and crossing timbers, six 9-ft.; three 10-ft.; four 11-ft.; six 12-ft.; six 13-ft.; three 14-ft.; two 15-ft.

Three 30-ft. steel rails.

One 27-ft. steel rail.

One 20-ft. switch.

35 sleepers.

157 8 in. chairs; 39 6-in. chairs; 52 point and crossing chairs; 225 keys; 112 bolts; 285 spikes; 273 screws; six fish-plates.

DAMAGE TO VIADUCT.

92 lineal feet of parapet-wall knocked down; 287 lineal feet of stone coping (including six heavy caps) displaced longitudinally 1 ft. 9 in., without any appreciable lateral displacement.

Printed copies of the above Report were sent to the London and North-Western and Midland Railway Companies on the 12th August.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
August 22nd, 1892.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with your Order of the 4th instant, the result of my enquiry into the collision that occurred on the 31st July at Penmaenmawr station, on the London and North-Western Railway.

On the above date, at 2.6 a.m., a special goods and cattle train from Holyhead ran into a special passenger train, which was standing on the up line at the east end of the station. The passenger train had conveyed the 2nd Volunteer Battalion Shropshire Regiment from Chester to Conway Marsh, where the men were detrained for the purpose of going into camp. The train had then been sent forward on the down line to Penmaenmawr with the regimental baggage and a fatigue party of about 16 men. It was there transferred from the down to the up line, and was about to return to Conway Marsh on the up line, for the purpose of unloading the baggage, when the collision occurred.

Seven volunteers and three servants of the Company are reported to have been injured, but in no case were the injuries of a serious nature.

The passenger train originally consisted of engine No. 218, tender, and 13 vehicles, including one brake-van and two third-class brake-carriages, and it was fitted throughout with the automatic vacuum-brake. But when it arrived at Penmaenmawr the train engine was detached, and engine No. 2470 was attached to the rear of the train for the return journey. Before starting, however, some shunting was necessary in order to have the train properly marshalled, and at the time of the collision the train consisted of engine No. 2470 (with six wheels coupled), tender, and 11 vehicles in the following order, viz., engine, tender, three passenger coaches, a third-class brake, a brake-van, three passenger coaches, a horse-box, and two covered trucks.

The cattle train consisted of engine No. 75 (with six wheels coupled), tender, 37 waggons of goods and cattle, and a brake-van. The engine was fitted with automatic brake apparatus and with the steam-brake, and the tender and van had the usual hand-brakes. There was no continuous brake on the train.

The damage to the passenger train was very serious. The three hindmost vehicles were more or less completely broken up, and the next two coaches, in which the injured passengers were seated, were badly damaged. All the above were turned over on to their sides on the up side of the line. One other coach was slightly damaged, but it remained on the rails. A fire broke out in one of the trucks, but was quickly extinguished. The engine and the rest of the train were uninjured.

The engine of the cattle train had its smoke-box smashed in, buffer-plank and castings broken, and motion badly bent.

For details of the damage to rolling-stock, see Appendix.

The permanent-way had 34 chairs broken, 32 sleepers damaged, and the connecting-rods of the points broken and bent.

A quantity of baggage, consisting of bicycles, rifle-racks, officers' trunks, clothing, Government stores, tobacco, &c., &c., was injured.

Description.

Penmaenmawr is a double-sided station, with up and down platforms about 180 yards long, connected by a footbridge at the west end. The signal-cabin is situated at the west or Holyhead end of the down platform, and opposite the cabin there is a cross-over road between the up and down lines. There are sidings at each end of the station on the up side, having trailing-point connections with the up main line. The sidings at the east (or Conway) end of the station are known as the "field ; those at the other end as "Darbishire's" sidings. The distance from the signal-cabin to the points for the "field" siding, where the collision occurred, is 250 yards, and from the signal-cabin to the up home-signal 80 yards.

Penmaenmawr is approached from the west by a falling gradient of 1 in 231, which changes into a rising gradient of 1 in 727 through the station.

Evidence.

1. *Charles Baker* states: I am a driver, and have been in the service of the company 26 years, and a driver 17 years. I booked on duty at Whitchurch at 10.5 p.m. on Saturday last, July 30th. My train consisted of 12 vehicles. The number of the engine was 218, and it was fitted with the automatic-brake, and there was the automatic-brake arrangement throughout the train. I arrived at Penmaenmawr at 1.32 a.m. I stopped at the platform, and had orders to draw over the points at the Holyhead end of the station, and this was done, after which I was told to hook off. My mate reversed the lamps from white to red, and hooked off. I then pushed the train across from the down to the up main line, to assist the other engine, and then stood on the up line about three minutes before being ordered to the siding at the Holyhead end of the station. The guard asked for my ticket, and the pointsman then instructed me to run my engine into the siding at the Holyhead end of the station. I heard no orders except what the pointsman gave me. I did not hear anyone give the pointsman any orders. I came off duty at 4 p.m. on Saturday 30th July, having come on duty at about 7 a.m. the same morning. The train was special and booked to leave Whitchurch at 10.50 p.m. We left 30 minutes late, viz., at 11.20 p.m. The automatic-brake connections were properly made, and the brake was tested before starting, and was in good order. We stopped at Conway to allow the volunteers to get out of the train. We were there 12 minutes, and then we received orders to come on to Penmaenmawr. Orders were given to draw down over the points for the cross-over road, by signalman Evans and by inspector Cooper. After standing on the up line for three minutes, the signalman gave me instructions to go into the siding clear of the road. I did not quite understand him, and I sent my mate to the box to find out what was wanted, and he told him we were to go into Darbishire's siding at the Holyhead end of the station. I had been in the siding about three minutes when the cattle train passed us. While I was standing in the siding, I went to the box to ask how long I was to be kept there, and while going to the box I saw the up home-signal was off. I shouted to the signalman, and told him to put the signal to danger, and show that man a "red un," and he did so, but it was too late. He put the signal at danger just as the cattle train reached the box. I then ran up the platform to see if I could be of any assistance. When I was in the siding I could not see the special train on the main up line, but I knew that it could not have had time to get out of the way. I could not see any tail light on it. I assisted two of the volunteers down the platform after the collision.

2. *George Lee*, brakesman, of Whitchurch, states: I was guard in charge of the volunteer train on the night of Saturday last. We left Whitchurch at about 11.20 p.m., and ran all right until we got to Penmaenmawr, where we arrived at about 1.32 a.m. My train was marshalled as follows:—Engine, covered carriage-truck, open carriage-truck, horse-box, three coaches, one van, shackle twin-train, consisting of brake-coach at each end and three coaches between, and an ordinary coach behind these. All the volunteers were detrained at Conway except a fatigue party in charge of the baggage. We stopped at the platform at Penmaenmawr, and then pulled forward to enable the train to be crossed to the up line and an engine which was standing on the up line was backed on to our train, and endeavoured to draw the coaches across to the up line, but could not do so for some few minutes, as the driver could not blow off the brake. Inspector Cooper gave orders that the engine which brought in the train should assist in pushing the train across, and this was done. I stood on the platform until the train had crossed on to the up line. The rear coach and van were detached, and put into the siding at the Conway end of the station, and I went to them. The porter asked me if I would look after the brake while the vehicles were pushed a little further into the siding, and I did this. The inspector called out for Beech, my assistant guard, and told him to bring the tail lamp to go behind the van that was in the siding. Assistant guard Beech brought the lamp to me, and I put it on the van. Inspector Cooper told me to hook the engine on to the coaches which were on the up main line against the platform. I did this. The engine went ahead over the points with the intention of backing on to the remainder, ready to go right away. After we were over the points, in readiness to go into the siding, myself, inspector Cooper, and the porter all called out to the signalman to put us into the siding. I was standing at that time at the Conway end of the platform, the inspector close to me, the assistant guard in the four foot, and the porter at the crossing points. I was nearest to the signalman at the moment the order was given. I got no reply from the signalman, neither did he turn the points. Mr. Frith came and spoke to inspector Cooper, and drew his attention to the advanced starting-signal being off, asking him if that was for our train. We all turned round and found that the home-signal was off as well. I then ran

along the up platform exhibiting a red light as far as the signal-box, with a view of stopping the on-coming train which I could hear approaching. When I was half-way down the platform the cattle train was in sight, and I at once blew my whistle, and exhibited my red light, and the driver then shut off steam and endeavoured to stop. I then saw the home-signal put up to "Danger" as the driver was about against it. The collision then happened, and I afterwards called to my assistant guard Beech, and he answered me, and we both went to render what assistance we could. I have been in the service of the Company 7½ years, and have been a brakesman three years. I have been down this way before. There was no tail lamp put upon the truck which stood at the Holyhead end of Penmaenmawr platform, and which was originally the first vehicle, but at this time was the last, as the engine which brought in the train had gone into the siding, and a red tail-lamp was placed on the platform at the side of the last vehicle. I came on duty on the 30th July at 10.5 p.m. I had come off duty at 5.30 the same morning, having been on duty from 5.30 p.m. on Friday. I took charge of the volunteer train at Whitchurch. I had another guard with me. We were 25 minutes late at Penmaenmawr. The fatigue party in the train numbered 16. I received no orders from inspector Cooper or from anyone else on arriving at Penmaenmawr. While the train was being drawn forward and pushed back through the cross-over road, I was in my van. On reaching the up platform I alighted. No complaints of injury were made to me. The damage to my train was as follows: Five vehicles badly damaged, and one slightly damaged, and one empty cattle truck in siding off the road. Five vehicles of the train were overturned on the upside, and the down line was also fouled. At 3.20 a.m. the five vehicles which were not damaged were taken away to Conway.

3. *John Beech*, foreman at Whitchurch station, states: I acted as front guard of the volunteer train on Saturday night last. After the train arrived at Penmaenmawr I stopped in the van until it was crossed on to the up main line. Then I remained in the van until guard Lee called out to me to fetch a tail-lamp. I proceeded down the platform, but could not see the lamp until I asked the fireman of the Whitchurch engine, who was standing in the rear of the train, and he told me there was a lamp on the platform but owing to the darkness I could not see it at first. I, however, found it after a search about five or six yards in rear of the last vehicle. I gave the lamp to guard Lee. I do not know what guard Lee did with the lamp, and did not see it again. I only heard one remark made to the signalman, and that was by inspector Cooper, who said, "Have you got the down mail on?" and the signalman said, "No, but I have a cattle train on." I heard inspector Cooper tell the signalman that we should go first. The signalman stood at his window, and answered Cooper's first question as to whether the mail was on. Inspector Cooper did not move from his position then. I heard nothing more until Mr. Frith asked inspector Cooper if the signal, pointing to the signal in advance of me, was off for us, and he said he expected it was. At this time our train was standing over the points ready to go into the siding, and I turned round myself and said, "There is a signal off in the rear. I can see the white back light." Inspector Cooper said, "Then "he has let the cattle train on to us" or words to that effect. I then got my red light and went to meet the on-coming train. The collision then occurrred. I have not been down to Penmaenmawr before. I have been in the London and North-Western Railway service 13 years, and traffic foreman since last November. I came on duty at 10.45 p.m. on Saturday, having come off duty at 5 p.m. the same day. I came on duty at 4.30 a.m. on Saturday morning. I went home between 6 and 8 that morning, and from 1.30 to 3 p.m. I usually come on duty at 6.45 a.m. until 6.30 p.m. but in consequence of the holiday season I had to come on duty earlier. I received no instructions from anyone on arriving at Penmaenmawr, and I did not know what was going to be done with the train. I am not certain whether the conversation between Cooper and the signalman which I heard, took place before or after I gave the lamp to Lee. Inspector Cooper was standing near the west end of the up platform near to me at the time. I afterwards returned to the other end of the platform and joined guard Lee and inspector Cooper. I was ordered by the station-master at Whitchurch to accompany the train in order to ensure that the twin train should be returned without delay to Whitchurch.

4. Inspector *Cooper* states: I joined the train at Conway with the intention of attending to the working of the train and seeing to the unloading of the baggage at Conway Marsh. We arrived at Penmaenmawr at 1.32 a.m., and stopped at the down platform. I was afraid we should be in the way of the down Irish mail. I went to the signalman and arranged for the train to go ahead over the cross-over road, at the same time asking the signalman if he had got any tidings of the down Irish mail. The signalman said the mail was not on, but that he had got a cattle train coming up. The signalman afterwards gave me a piece of paper showing the running of the down mail and the two down volunteer trains. Before I left Conway I endeavoured to get to know from the signalman how the down Irish mail was running, but he could not give me the information, and wired to Rhyl for it, promising to send it to Penmaenmawr as soon as he received it. At Penmaenmawr I told the signalman, the driver, and the porter what was going to be done, and the signalman said, "I have got an up cattle train on," or words to that effect. I said, "We will try to get "away in front of the cattle train," and I also told him that I should have to reverse the brake-van, as there were six vehicles in front which had become vehicles in rear. It was therefore necessary to make a shunt, and the signalman replied to the effect, "All right." I was then standing near the front of the signal-box. After the train had drawn clear of the cross-over road the driver was stopped, and the signalman called out, "Will you have this engine?" meaning the engine that was standing on the up main line. We drew the train clear of the cross-over road, and backed on the train the engine standing on the up line. I called out to the driver, who brought the train in to detach the engine, and I also sent a man down to see, that this was done. The engine that had backed on to the train from the up main line had some difficulty in creating a vacuum and getting the brakes off. After a little delay, however, they were got off, and the train started, but as the driver was passing the box he was stopped by the signalman, I presume, so I ran to see what was the matter, as I was afraid of delaying the Irish mail, and someone called out, "He "has got the tail-lamp on the tender." I said, "We are not going away, we have to make a shunt." I fancy it was the signalman who stopped the driver. The driver drew right across, and as he was going across I lifted the tail-lamp off the van, and placed it on the platform, showing a red light towards Llanfairfechan. I called the driver, who brought the train in to follow across to clear the road, and he did so. I left him there with two red lights on the buffers. I then went up to the front of the train to have a coach and van detached and placed in the siding to form the rear brake. After these vehicles were detached the engine and vehicles ran ahead over the points leading from the main line to the siding. The driver whistled and the points were turned for the siding. I said to the porter who went by that the vehicle should not be hooked off the engine, but that they must be brought in with the engine, and that we would just put them through the points clear of the main line. This was accordingly done, and then the engine ran out on to the up line over the points, and the driver sounded his whistle to enable him to come back on to the remainder of his train which was standing at the

platform, but the points were not turned, and I looked back and said, "The coach and van which have been "detached in the siding are not over the trap points." I called the driver back to push them into the siding clear of the trap points. This was done, and again the driver ran out and sounded his whistle, and the points were turned for the main line. I then called the driver to back on to the train, and at the same time I said to the guard, "Your tail-lamp is on the "end of the platform, and you can bring it and put "it on the van, so that we shall not go away without "it." I knew that I had left the engine which brought the train standing behind the train and had given no instructions as to its being moved. Immediately after the guard had gone Mr. Frith came up to me and said the signalman wanted to know if I would clear the main line, as he had a cattle train on from Llanfairfechan under the "warning arrangement." I said I would have the line cleared, and sent the driver ahead with the intention of shunting into the siding on to the other two vehicles. At the time Mr. Frith spoke to me I sent the porter to see if the siding was clear, and he returned and said it was. The driver was stopped over the points, and he whistled for the siding. The points were not open, and Mr. Frith said, "What are the signals doing off, are they for you?" I said, "No. My word; he has "pulled them off for the cattle train." I immediately showed a red light, and so did all the others there, and shouted out to the signalman to reverse his signals, and I also called out and showed a white light to the driver of the volunteer train with a view of getting his attention to run ahead out of the way; but I failed to do this. When the signals were reversed the cattle train was approaching and in sight, but the driver failed to stop before the collision took place. I was so much upset that I did not really know what to do. I, however, went to see what was the result, but did not see any of the volunteers who were in the train. As soon as I could get a hand-lamp a flagman was sent out to protect the down line, and the breakdown gang was wired for. A telegram was also sent to my superintendent. I then took steps to work single line. I did not instruct the signalman to keep the cattle train back after having told him that I wanted to get away in front of it. I did not attach the tail-lamp to the last vehicle in drawing from the down to the up line because the engine was close in rear of it, and had lights on. When guard Beech fetched the lamp away the light engine was still standing at the platform. After completing the work of this train I intended going back to the signalman to instruct him how to deal with the next volunteer train and light engine. And after the change of plan caused by shunting into the siding I should have seen the engine was clear, and then told the signalman the road was clear for the cattle train.

5. *Mr. Frith*, time-table clerk, superintendent's office, Chester, states: I had been down to Conway Marsh to look after the arrangements for dealing with the baggage, and I joined the volunteer train at Conway, going on to Penmaenmawr with it. We arrived at Penmaenmawr at 1.32 a.m., and the train was crossed over to the up line, and I then got out of the train. My lamp was out, and I was met by a man on the ground who proved to be Beech, the assistant guard of the train. He asked me if I wanted a match for my lamp, and I replied, "No, I want some oil for it, can you give me some?" I thought at the time he was a man about the station. He said, "No, I am a stranger here." I said, "I will get some at the signal-box." I stood on the up platform until the train had drawn past me, when I crossed the line to the station-master's office, intending, if possible, to get what I wanted there. There was, however, no one in, and I went to the signal-box and asked the signalman, Evans, who was standing at the door, if he could give me some oil. Evans was in a stooping position on the step, looking under the footbridge, and said, "I am watching what they are doing." I said, "Do not let me interrupt you; go on with your work." Evans did so, and after the lapse of two or three minutes put some oil in my lamp. He then said, "Do you know what they are doing?" I said, "I heard inspector Cooper say he was going to "'twice' the train in the field siding." Evans said, "Is he going on, or is he going to shunt?" and I replied that he was going to shunt. Evans then said, "I will accept the cattle train under the 'warning.'" This was the first I had heard about the cattle train. Evans asked me if I was going to the "field" siding, and I said, "Yes." He said, "Will you tell inspector "Cooper that I have got a cattle train on under the "'warning,' and that it is close too. Will he shunt "for it, and get in as quickly as possible to save delay "to it. It will not delay you five minutes." I said I would do what he wished, and went immediately to inspector Cooper at the siding and informed him what the signalman had told me. Inspector Cooper said, "All right," or words to that effect, and went on doing the work. I noticed the engine and train waiting above the points to be put into the siding, and I then noticed that the inspector was apparently waiting for the points to be turned. This state of things lasted for a couple of minutes. I then saw that the starting-signal was lowered. I drew inspector's Cooper's attention to this, asking him what it meant, and it was then noticed that the home-signal was off as well. I then said, "He has let the cattle train on to us," and at once turned the red light of my lamp, and ran up the platform shouting to the signalman to stop the oncoming train. The accident then happened.

6. *Joseph Capper* states: I am a driver, and have been in the service 23 years, nine of which I have been a driver. I booked on duty at 11 p.m. on July 30th, and was in charge of engine No. 2470. Before I backed down to the train on the down main line I heard inspector Cooper tell the signalman that he wanted to reverse the van, put the van into the siding first, and pick the train up, and back on to the van again in the siding. Inspector Cooper told me this also. At this time I was standing on the down road opposite the signal-box. The signalman was looking out of the window and answered, "All right." I came off duty at 2 p.m. on Saturday, 30th instant, after having been on duty for 10 hours. I reached Penmaenmawr at 12.20 a.m. on the night of 30th July, having run over from Llandudno junction light. I was in the stone siding at the Holyhead end of the station when the volunteer train came in. The signalman and inspector called me out of the siding and I stood on the up line a few minutes. I then set back on the tail of the volunteer train through the cross-over road, and after being coupled on to it I had some difficulty in getting a vacuum. After the train was crossed on to the up line my engine and one carriage and van were detached and sent back into the siding, at the Conway end. I did not whistle for the points to go into the siding the first time. I was called back a second time by a hand-signal to set the van and coach a little further back into the siding as they were not clear of the trap-points. I did not whistle then, either. After setting them further back, I ran out on the main line and whistled for the points to be set so as I could back on to my train on the main line. The points were set for me. I backed on to the train, and then drew the train forward so as to clear the points so as to set back into the siding and pick up the van and coach. The engine was just past the starting-signal and the points were not moved. We waited for a minute or two. I did not see or hear the starting-signal drop. While I was waiting to set back I got a hand-signal to draw ahead, and I at once put my engine into forward gear and was giving the engine steam when I was knocked into the tender. I had no idea whatever that anything was coming, and I was dazed at first by the collision. When I came to myself I found the regulator was open and my wheels revolving, but the train was held by the brake,

which was automatically applied by the fracture of the pipes at the tail of the train.

7. *David Evans*, signalman, Penmaenmawr, states: I have been in the service 24 years, 21 years of which I have acted as signalman at Penmaenmawr. I came on duty at 6 p.m. on Saturday July 30th. My box is a 12-hour box. The volunteer train arrived at Penmaenmawr at 1.32 a.m. I "blocked back" to Llanfairfechan previous to the arrival of the volunteer train, as there was an engine in the up siding which I wished to let out. The engine was crossed to be attached to the volunteer train in rear. In drawing across from the down to the up line the engine was unable to start, and I heard someone say, "You have "got the brakes on." Afterwards the train came up to the platform. Just as the engine was passing my box I gave the driver who was drawing the volunteer train a red light on account of his having a tail light attached to his engine. The lamp was taken off by the fireman, and the train proceeded. As the carriages passed me I saw inspector Cooper on the up platform, and I explained to him why I stopped the train. "Oh," said inspector Cooper, "He is not right away." I replied, "Oh, isn't he." Inspector Cooper then told me that he wanted to leave some of the carriages in the field siding, as he had too many on. He then told me that he was going into the "field," and the train drew forward. I was on the steps of the signal-box waiting for the signal to turn the train into the field siding. I received one whistle, and I opened the points so that the train might enter the siding. I then asked Mr. Frith to go down and tell them to go into the siding as I had a cattle train that I wanted to pass. Mr. Frith then went to the volunteer train, and after some time had elapsed I heard a crow from the engine that was attached to the volunteer train. I then closed the points and opened Mr. Darbishire's siding points to turn the light engine in, which was standing at the up platform. I had previously told the driver what my intention was, viz., to turn him into the siding as soon as I got the signal from the volunteer train that he was clear inside the siding. The driver of the light engine said he could not hear me at first, and sent his fireman to the box, and I told him what I wanted him to do. When I had placed the light engine in the siding I lowered the signals for the cattle train, and took the crow that was given by the engine attached to the volunteer train to signify that the train was clear in the field siding. I asked Mr. Frith to tell inspector Cooper to get the train into the siding, but I had no reply except the crow. When the volunteer train came into the station, the light engine (driver Capper) was standing on the up main line, ready to back on to the tail of the volunteer train. The driver of the Whitchurch engine did not send his fireman to the box, but some one, I do not know whether it was the driver or fireman, got off the engine and came opposite the box; and stood in the 4-ft. way of the down road. When the volunteer train arrived inspector Cooper did not come to my box and the first time I spoke to inspector Cooper was when he was standing on the up platform. I gave a piece of paper containing information about the running of the down mail to porter Evans just as the train was coming in, and told him to give it to inspector Whitlock thinking he would be with the train. Inspector Cooper asked me if I had the "Down mail" on, and I told him there were no signs of it then, and I do not think I told him anything about the cattle train. He was standing on the up platform when he asked this. I did not receive any instructions from Cooper about reversing the brake van. I accepted the cattle train under the "Warning arrangement," and it would be about the distant-signal when I lowered all the signals for it to advance. I blocked backed at 1.14 p.m. to Llanfairfechan. At 1.53 I accepted the cattle train under the warning arrangement. At 1.55 I received "Train entering section" signal from Llanfairfechan. At 2.6 p.m. the train arrived. I took the "crow" to mean that the train was in the sidings, but there is no rule to that effect. When I saw the red lights I instantly put up the signals and gave a red light myself. I do not remember saying to Mr. Frith, "Do you know what "they are doing?" nor do I remember his saying that they were going to "twice the train in the field siding."

8. *Joseph Stockton*, fireman to driver Baker, states: I had to get off my engine and go across to the signal-box to hear what the signalman had to say, and he told me to tell my mate to draw into Darbishire's siding at the Holyhead end of the platform, as he had a train coming. The engine was blowing off steam at the time, and for this reason I had to go to the box to hear what the signalman had to say.

9. *John Wright*, driver, states: I have been in the service 14 years, and have been a driver two years. I booked on duty at 10.45 p.m. on Saturday July 30th at Holyhead to work a special of cattle to Chester. On arrival at Llanfairfechan I was stopped and warned. The distant-signal on approaching Penmaenmawr was at "Danger" until I got close to it and then it was pulled off. On first sighting the home-signal it was off, and I put on steam. I saw the starting-signal off as well, and the first intimation I received of any danger was the waving of red hand-lamps, three on the main line and one on the platform. I did not see the home nor the starting signal reversed. I reversed the engine and did my best to pull up. I struck the volunteer train when running at a speed of 10 to 12 miles per hour.

10. *Richard Evans*, porter, states: I was on duty at Penmaenmawr on the morning of Sunday last when the volunteer train arrived. After its arrival the signalman gave me a piece of paper to give to inspector Cooper and the paper showed the running times of the down trains. Inspector Cooper then said that he had two coaches on his train to reverse, and he asked me where he could marshal the train, and I told him in the field siding. I went to the driver Capper and told him to draw up to the end of the platform. I then went with the train on the up line and uncoupled the two front vehicles, after which I went with the driver to watch him going over the points into the field siding. When we got into the siding, we found that we were not over the trap-points, and had to come back again to push the vehicles further into the siding to clear the trap. We then came on to the main line again. I put on the hand-brake to prevent the vehicles running down the incline. When I heard the cattle train approaching I ran to meet it with a red light. I gave no signal whatever to the signalman. I have been in the company's service four summers. I am employed only during the summer months. On the 30th July I came on duty at 10 a.m. I had an hour for dinner and one hour for tea. I was on duty on the platform at 1.32 a.m. on the morning of Sunday the 31st when the volunteer train arrived. It drew forward to clear the cross-over road. I went down with it, and the signalman gave me a piece of paper showing the running of the down train, which I was to give to the inspector in charge. I gave it to inspector Cooper on the down platform. The inspector gave me instructions about reversing the two coaches and asked me if he could do it in Darbyshire's siding, and I told him there was no room, but he could do it in the "field." After giving inspector Cooper the piece of paper, he went to see the train over the points; and I did not see him stop at the signal-box. I did not speak to the inspector again till I was uncoupling the van and carriage on the up line. I did not hear him speak to the engineman of the light engine. The light engine was on the main line when the volunteer train came in. I did not hear the driver whistle at all before setting back into the sidings, or backing on to his train.

Conclusion.

This was a very serious collision, and it was by a mere chance that the consequences were not more disastrous. Had the coaches in which the volunteers were seated been at the tail of the train when it was struck, the results would probably have been fatal. It was caused, as will be explained further on, by the signalman's breach of the rule (No. 181A) which lays down that—

"After shunting operations of any description the signalman must see, or have word from the guard (or if a shunter has been employed, then from him), that the carriages or other vehicles have been left secure in the sidings, and that the main lines are clear before lowering the signals to allow any train or engine to pass."

The circumstances of the case are briefly as follows: A special train conveying a body of men belonging to the 2nd Volunteer Battalion Shropshire Regiment from Chester to Conway Marshes had, after the men were detrained at the latter place, proceeded with the baggage and a fatigue party to Penmaenmawr, where it was transferred from the down to the up line, so as to clear the road for the down Irish mail. For this purpose a fresh engine was attached to the tail of the train, and drew it through the cross-over road opposite the signal-cabin. It was then intended to run the train on the up line back to Conway, where the baggage was to be unloaded, and when this was completed, the train was to proceed on its return journey to Chester.

Before starting back to Conway it was necessary to make a shunt so as to transfer the brake-van, which was formerly at the tail, but which was now at the head of the train, from front to rear. To accomplish this the engine, one coach, and the brake-van (there being one coach between the engine and van) were unhooked and shunted into the "field" siding, which, as already stated, is at the east end of the station, and about 250 yards from the signal-cabin. After placing the two vehicles in the siding the engine ran out on to the up main line, and, the points being reversed, it backed on to the remaining vehicles of its train, and drew them forward clear of the same points, ready to back them on to the coach and van already in the siding. The train would, when this was done, have been properly marshalled and ready to start on its return journey. After drawing ahead of the points, as described, the driver whistled for them to be set a second time for the siding, and while waiting on the up line for this to be done, it was suddenly noticed by those in charge of the shunting operations that the up home and starting signals had been lowered by the signalman for another train. The men at once shouted to the signalman to put the signals to danger, and ran back towards the train which they could hear approaching, waving their red hand-lamps to warn the driver of his danger. But the latter could not stop in time, and the second train, which was a "special" conveying goods and cattle from Holyhead, ran into the tail of the passenger train as it stood on the up main line, with the disastrous results already described.

The volunteer train had arrived at Penmaenmawr at 1.32 a.m. on the 31st July, being 25 minutes late. It was accompanied by traffic-inspector Cooper, Mr. Frith, from the superintendent's office at Chester, and two guards Lee and Beech, the inspector being in charge of the working arrangements. As soon as the train arrived, Cooper seems to have gone towards the signal-cabin, and explained to signalman Evans what he wished to do. Cooper was anxious not to delay the down Irish mail, and asked the signalman if he had news of it. Evans replied he had not, but that he had a cattle train coming up from Holyhead, and Cooper said he would get his train away in front of the cattle train. The operations already described were then carried out, and the volunteer train was transferred from the up to the down line, though some delay occurred owing to a difficulty with the vacuum-brake. When the train had crossed from the down to the up line, the engine which had brought it to Penmaenmawr also crossed over and stood on the up line behind the train. The engine was then showing two red lights towards Holyhead, and a third red light turned in the same direction was placed by Cooper on the up platform near the tail of the train, these three lights being intended by Cooper to act as tail lights for his train during the shunting operations, though none of them were actually attached to the train. The shunting of the van into the "field" siding then took place, and while it was in progress, Mr. Frith had occasion to go to the signal-cabin for some oil for his lamp, and signalman Evans enquired of him what they were doing. Mr. Frith explained Cooper's intention, and Evans asked him if he would inform Inspector Cooper that he (Evans) had accepted the cattle train from Llanfairfechan under the "warning arrangement" (*i.e.* "Section clear, but station blocked"), and request him

to shunt the volunteer train into the siding, so as to let the cattle train through without delay to it. Mr. Frith thereupon went towards the "field" siding and gave Evans' message to Cooper. After Mr. Frith had left the cabin, the signalman directed driver Baker to put his engine, which was then on the up line in the rear of the volunteer train, into the siding at the Holyhead end of the station. And about the same time Cooper caused the red lamp, placed by him on the platform, to be removed, so that the three red lights, which originally protected to some extent the shunting operations, disappeared. As soon as Cooper received the message brought by Mr. Frith, he agreed to do what the signalman wished, but before he had a chance of putting his train into the siding the collision took place.

Signalman Evans declares that the account given by Cooper as to what communications passed between them on the arrival of the volunteer train at Penmaenmawr is incorrect. He says that Cooper did not tell him anything as to the necessity for making a shunt, and that no reference was made at that time to the fact that a cattle train was approaching. He also denies that Mr. Frith made any explanation to him as to what Cooper intended to do. But driver Capper states that he heard Cooper explain to the signalman what he proposed to do, and guard Beech heard Cooper tell the signalman that he would get the volunteer train away in front of the cattle train. The evidence on this point is therefore against the signalman, and I am bound to accept Mr. Frith's and inspector Cooper's statements as to what passed rather than Evans. At any rate Evans knew that the train was on the up line, and whether he understood what amount of shunting had to be done or not, he was fully aware that the cattle train could not pass till the first train was out of the way. He was therefore acting according to rule in accepting the cattle train from Llanfairfechan under the "Section clear, but station blocked" signal, instead of giving "Line clear" for it. And there was no reason against his sending a message to ask Cooper to get his train out of the way, so that the cattle train might not be delayed. But having done this, it was his duty to have waited till he had positive assurance that the line was clear before he lowered his signal for the cattle train. Instead of this, Evans says that he heard a "crow" from the engine of the volunteer train, and taking this to mean that the train was safe in the siding, he thought the line was clear for the cattle train, and thereupon lowered the signals for it.

It was a dark night, and he could not see what was going on at the Conway end of the station, and the footbridge somewhat obstructs the view from the signal cabin. The necessity for waiting for a reply from Cooper was therefore greater.

The driver of the cattle train who had received the "warning" at Llanfairfechan, was prepared to stop his train at Penmaenmawr, and of course expected to find the signals against him. When he came in sight of them, and found that they were lowered for him, he was justified in assuming that the obstruction, whatever it was, had been removed, and he gave his engine steam so as to run through the station without stopping. As he reached the home-signal, he saw red lights being waved in front of him, and at the same moment the signal was thrown up against him, and realising something was wrong he immediately tried to stop by putting on his brake and reversing his engine. But it was too late and he ran into the volunteer train at a speed of about 12 miles an hour.

The blame for the collision must rest on signalman Evans, and I am unable to find any excuse for him. Whether he rightly understood inspector Cooper's arrangements or not, he was fully aware that the volunteer train had been placed on the up line, and until he saw for himself, or had positive assurance from the person in charge of the train that the up line was clear, he was prohibited by the rule already quoted from lowering any signals to permit another train to pass on the same line of rails. The rule makes no reference to whistling or "crows." Such signals are not recognized as conveying any intimation that shunting operations are completed. And it seems hardly credible that on a dark night a signalman could be so careless as to accept the whistling of an engine as sufficient indication that the main line was clear. I have no doubt that the sound heard by Evans was the whistle given by the driver for the points to be moved, so as to let him back his train into the "field" siding. The fact that Evans had 21 years' experience as signalman and bears a high character, seems to me to make his conduct on this occasion the more unaccountable. He had been on duty about eight hours at the time of the collision.

Inspector Cooper made a mistake in not attaching a red lamp to the tail of the train as soon as it reached the up line. It is true he placed a red light on the platform, and that the engine standing in rear of his train also had two red tail lamps. But

these were all liable to be removed, and as matter of fact were removed, in the manner already explained, while the train, which they were supposed to protect, still remained on the main line. And though I do not regard the absence of the tail light as any excuse for the signalman's action, it is possible, that had there been such a light on the train it would have reminded him that the train was still standing on the main line, and have also given the driver of the cattle train earlier warning of the obstruction ahead of him.

I attach no blame to the other servants of the Company, for they were acting under inspector Cooper's orders, and as regards Mr. Frith, he had nothing to do with the working of the train, though doubtless he would have readily lent his assistance if required. He had been sent with the train for the purpose of looking after the baggage.

There seems to have been an unnecessary waste of time in performing the simple shunting operations already described. The volunteer train arrived at 1.32 a.m., the cattle train arrived at 2.6 a.m., so that 34 minutes were available for getting the former out of the way of the latter. There were two guards with the volunteer train, besides the inspector and Mr. Frith, and there was also station-porter Evans. With all this assistance at hand, the delay and misunderstanding that occurred in dealing with the train is not very creditable. A definite arrangement should have been made between the inspector and signalman as to what was going to be done, and all concerned should have received from the inspector clear instructions as to their duties. Reviewing all the circumstances of the case, it seems probable that divided counsels and control contributed in some measure to the disaster.

Although not directly connected with the collision, the short intervals of rest between two turns of duty in the cases of driver Baker and guard Beech, and the long hours of duty of porter Richard Evans, call for remark. Driver Baker came off duty at 4 p.m. on Saturday the 30th July, after a spell of nine hours work. At 10.5 p.m. the same night he booked on again, having had only six hours rest. Guard Beech left duty at 5 p.m. after nine hours duty (deducting $3\frac{1}{2}$ hours for meals), and came on again at 10.45 p.m., having had only $5\frac{3}{4}$ hours rest. Porter Richard Evans was on duty from 10 a.m. on Saturday, till the time of the collision at 2.5 a.m. on Sunday, having had only two hours for meals during this long period of 16 hours. The short intervals of rest in the two first cases, and the long hours of labour in the third, are unsatisfactory.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

(Signed) H. A. Yorke,
Major, R.E.

APPENDIX.

Particulars of Damage to Rolling Stock.

Horse-box No. 88.—Body badly damaged, and without frame or wheels.

Carriage truck (open) No. 63.—Badly damaged, and without wheels.

Carriage truck (covered) No. 96.—Body completely smashed, and frame without wheels.

Third-class (42-ft.), No. 574.—Both ends badly damaged, and one pair of wheels deficient.

Composite carriage (36-ft.) No. 712. Damaged both ends, and axle of one pair of wheels badly bent.

Third-class (42-ft.), No. 440.—One end badly damaged.

Cattle waggon No. 46,848 (standing in trap of siding).—Side damaged.

Engine No. 775.—Smoke-box driven in, and motion badly bent.

Printed copies of the above Report were sent to the Company on the 8th September.

LONDON AND SOUTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
Whitehall, London, S.W.,
11th June 1892.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in your Minute of the 2nd instant, the result of my enquiry into the collision that occurred on the 26th May, at Southampton Station, on the London and South-Western Railway.

On this occasion the 5.30 p.m. train from Portsmouth, on arrival at Southampton, came into collision with a bogie carriage, which was standing at the buffer stops at the end of No. 1 platform line.

Three passengers are reported to have complained of slight injuries.

The train consisted of a bogie tank-engine (with four wheels coupled), and six vehicles, viz., a third-class brake, a first-class, a second-class, and two third-class carriages, and a brake-van. Of these, the engine and four vehicles (two at each end) were fitted with the automatic vacuum-brake, the two centre coaches being piped, so as to render the brake continuous between the two ends of the train.

No damage was done to the rolling-stock, buffer-stops, or permanent-way.

Description.

The collision occurred on what is known as No. 1 road, arrival platform. The latter is 200 yards long, and is partly roofed over. Connected with No. 1 road there are two sets of facing-points, one at the outer end of the platform, and the other about 70 yards from the buffer-stops. The first of these gives access to the carriage sidings, and the second, to the line leading to the pier. Trains arriving at the platform usually pull up short of this second set of facing-points.

Evidence.

James Bull, driver, states: I have been in the Company's service 18 years, and I have been three years relief and three years regular driver. On the 26th May I came on duty at 12.30 p.m. at Portsmouth, having come off duty at 11 p.m. the previous night. I have been driving the train between Portsmouth and Southampton for 12 months. I know the road well. At 5.30 p.m. I started from Portsmouth with a passenger train consisting of engine and six vehicles, including two brakes. My engine was No. 188, bogie tank-engine, with four wheels coupled, and trailing bogie, and fitted with the automatic vacuum-brake. The train was also fitted throughout with the automatic brake which was tested before leaving Portsmouth, and was in proper working order. The train was timed to stop at all twelve stations between the two terminal places, and the brake worked all right at each stop. We were four minutes late reaching Southampton. We were stopped by signal at Chapel Gate box, which is about quarter of a mile outside the station. When the signal was lowered for the train, I proceeded towards the station at about four or five miles an hour. All the signals were then off for No. 1 road, which is the usual one for that train. The platform is about 200 yards long, of which 72 yards are under cover, and the train usually stops at the end of the covered portion, which is 70 yards from the stops. I was prepared to pull up at the usual place, having applied my hand-brake at the entrance to the platform. We were running chimney first. I did not apply my vacuum-brake, as I was coming in with the hand-brake, according to rule. When I was about half way down the covered portion, I saw inspector Russell, who was in the 6-ft. way, give me hand-signal to draw well down, and I thought another train was to come in to the platform behind mine. My mate released the hand-brake, and about a coach length from the bogie carriage, standing against the stops, he reapplied the brake, and opened the sand valves. The engine-wheels skidded, and the brake did not have the effect it should. I at once applied the automatic-brake, but we struck the coach before the train was stopped. I saw the coach ahead of me, and felt quite confident of being able to stop in time. We were only going at a walking pace, when I reapplied my brake. There was no rebound after the collision. I felt no shock whatever on the engine, and neither my engine nor train were in any way damaged. The rails were greasy, as it was raining at the time. I think I had 18 inches of vacuum when I applied the automatic-brake.

George Henry Bailey, fireman, states: I have been in the Company's service six years, and have been fireman for about 14 months. My hours of duty were the same as my driver's on the 26th May. I have been firing for driver Bull for 14 months, and I corroborate my driver's statement in every particular.

Edward Heath, passenger guard, states: I have been in the Company's service 11 years, and about seven years guard, and I have altogether 23 years' railway experience. I came on duty at Portsmouth at 7.20 a.m. on the 26th May, having come off duty at 9.35 p.m. the night before. On two evenings in the week I am relieved at 5.5 p.m., and on other days at 9.35. Occasionally I am relieved for about 1 hour and 40 minutes in the daytime. I had been working the local train between Southampton and Portsmouth all day. I left with the 5.30 p.m. about one minute late. My train consisted of one first-class carriage, one second, two thirds, one brake-van, and one third-class brake. The two vehicles in the centre of the train were piped only, and had not the vacuum-brake; the other four vehicles were fitted with the brake complete. The brake was working well throughout the day. It was not actually tested before starting, but

my gauge showed 18 inches of vacuum, and I am confident the connections were properly made. On approaching Southampton we were stopped at Chapel Road box, and we then came on to the station at about four miles an hour. I applied my brake slightly as I entered the platform. I noticed that the train did not pull up in the ordinary position, and I thought the driver had some reason for drawing down, but I did not know what the reason was. The next thing that attracted my attention was the sudden application of the vacuum-brake, and then a slight rebound, which nearly threw me down. I was in the last vehicle, which was a regular brake-van. The vacuum brake was not used on entering the station, but merely as a last resort. I am sure there was 18 inches of vacuum before the last application. The train was not a very full one; but there were about 50 passengers. No one complained to me. The train was not damaged in any way, and went on with its work in the usual course. It was raining as we entered the station, and the rails were greasy. We were going about two miles an hour when the collision occurred.

Charles Russell, inspector, states: I have been with the Railway Company about 21 years, and inspector about 2½ years, and I have been all the time at Southampton. I was on duty at 6.37, the time when the 5.30 train from Portsmouth was due to arrive. It came in four minutes late. I was in the 6-ft. between No. 1 road and the carriage sidings, and I saw the train coming in, and noticed that it was approaching rather slower than usual, and would stop too soon. I gave the driver a hand-signal to draw a little further down. The reason I did this was in order to clear the points behind the train to let a shunting-engine out of the carriage sidings. The fireman was in the act of releasing the hand-brake as the train passed me in answer to my signal. This was two or three yards inside the covered portion of the station. I did not watch the train as my attention was occupied with the shunting, and the first intimation I had of anything wrong was hearing the noise of the collision. It was a slight blow. I then went on to the platform, and three passengers complained to me of slight injuries. I cannot say whether the automatic-brake was on when the driver entered the station or not. The rails were greasy, as there had been a slight shower. I saw nothing to blame in the way the driver entered the station. He was coming in very cautiously, and I was surprised at the collision happening. I attribute the mishap to the greasy state of the rails, and the skidding of the wheels.

Conclusion.

It appears from the evidence that the driver entered the station at a moderate rate of speed, and that he was relying on the hand-brake and not on the continuous brake to pull up the train. The latter was, in fact, moving so slowly that inspector Russell, who was standing in the six-foot outside the arrival line, thought that it would stop too soon and foul the points leading into the carriage sidings. He was anxious to avoid this, as he had a shunting engine on the sidings which he wanted to get out. He therefore gave the driver a hand signal to draw the train further down the platform, and the fireman thereupon released the hand-brake, and let the train run down until it was about a coach-length from the bogie-carriage, which was standing by the buffer-stops. He then reapplied the hand-brake, but the rails being wet and greasy, the wheels of the engine skidded and slid along the rails. The driver immediately applied his vacuum-brake, which acted properly, but the distance was so short that before the train was stopped it struck the bogie-carriage. The shock was clearly a slight one, as no damage whatever was done to the engine, carriage or stops, and it is probable that had the passengers not been standing up ready to alight, they also would have received no injury.

Taking all the facts into consideration I do not think this collision can be attributed to want of care on the driver's part. He entered the station in the manner laid down in the regulations, and had he not been directed to draw further down the platform he would have pulled up 70 or 80 yards from the buffer-stops. After receiving the signal from inspector Russell, he drew his train further down than was necessary, because he thought that another train was to come in behind his own. His judgment was somewhat at fault, inasmuch as he allowed his train to approach too near to the bogie-carriage before reapplying the hand-brake, and did not make sufficient allowance for the rails being wet, and to this error the slight collision was due. He had been on duty for six hours and ten minutes at the time of the occurrence.

I have, &c.,

H. A. Yorke,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

Printed copies of the above Report were sent to the Company on the 27th June.

LONDON AND SOUTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.
10th September 1892.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 22nd ultimo, the result of my enquiry into the circumstances attending a fatal collision which occurred on the 20th ultimo at Ludgate junction, near Clapham junction station, on the London and South-Western Railway.

In this case the 9.50 p.m. down passenger train from Waterloo to Feltham, consisting of tank-engine and 12 passenger vehicles, when approaching Clapham junction station on the down Windsor line at 10.2 p.m., came into violent collision with an empty carriage train, consisting of tank-engine and 20 passenger vehicles, the engine of which was standing at the down home-signals at Clapham east signal-cabin, and the tail of which was about 84 yards inside, or west, of Ludgate junction down home-signals, and 35 yards west of Ludgate junction signal-cabin.

The empty train was driven forward for about 28 yards, and the two rear vehicles were telescoped, one of them being thrown on to the top of the engine, where, owing to the fracture of the compressed-gas cylinders and the instataneous ignition of the gas, it was very soon in flames, and, together with the two vehicles next to it, was entirely consumed.

The guard, George Weblin, who was riding in the brake-compartment of the rear vehicle, was thrown on to the top of the engine, both his legs being broken, and he was terribly burnt before he could be released from the wreckage, about five minutes after the collision. He died from his injuries about three hours afterwards.

The driver of the Feltham train was also seriously injured, and his guard was shaken. Seven passengers are returned as having sustained slight injuries, and a bystander, not a passenger, was badly hurt when assisting to extricate the guard of the empty train.

In the permanent-way there were 21 chairs broken, two rails bent, and several point-rods and rollers broken.

The engine and seven of the carriages in the Feltham train were damaged; three of the carriages in the empty train were destroyed by fire, and seven others were damaged. (For particulars *see* Appendix.)

Description.

The scene of this collision was about 35 yards west of Ludgate junction signal-cabin, where the double line from Ludgate Hill joins, on the north side, the London and South-Western Railway, here running from east to west.

There are seven lines of rails opposite to the signal-cabin, viz., two goods lines on the north side, then the up and down Windsor lines, then a long shunting line, and then, on the south side, the up and down main lines.

The signal-cabin, which contains 51 working levers, is outside the goods line, and the two adjacent block signal-cabins on the main line are West London junction cabin, 765 yards eastward, and Clapham east cabin, 380 yards westward. The main lines are straight, but from West London junction to Ludgate junction the Windsor lines—between which lines and the main lines there is throughout this distance an interval of several yards—curve first to the right and then to the left, running out into the straight, and becoming parallel to the main lines, near Ludgate junction cabin.

The following are the only signals to which it is necessary to refer, viz.:—

(*a.*) Ludgate junction down home-signals, which are upon a bracket-post on the south side of the main line 49 yards east of the signal-cabin, and 15 yards south of the down Windsor line. This double bracket-post carries four arms, viz., the down main home-signal on the left pillar, the down Windsor home-signal on the right pillar, the West London up distant-signal upon the latter pillar, and Clapham east down Windsor distant-signal upon the main post below the bracket. The main and Windsor home-signal arms are 35 feet above rail level.

(*b.*) Ludgate junction down goods line home-signals, which are upon a bracket-post carrying four down and three up signal arms, and situated 142 yards east of the signal-cabin, between the Windsor lines and the main lines.

(*c.*) Ludgate junction down Windsor distant-signal, which is the lowest arm on a three-armed post carrying also two up signals, on the proper side of the Windsor line, 602 yards east of the signal-cabin, and 163 yards west of West London junction-cabin. This signal-arm is 20 feet above rail level.

(*d.*) Clapham west main line down through and down local distant-signals, which are upon a double-bracket post on the south side of the main line, 161 yards west of Ludgate junction cabin, and 210 yards west of Ludgate junction down home-signals. This bracket-post carries also three up signal-arms, and the lights of the two down distant-signals, which refer only to the main line, are somewhat similarly situated in relation to each other to the Ludgate junction down home-signal lights, although they are only 28 feet above rail level.

(*e.*) Clapham east down home-signals, which are the three highest arms on a bracket-post carrying nine signals, 301 yards west of Ludgate junction cabin, and 350 yards west of Ludgate junction down home-signals.

There is a good view of all these signals.

The actual point of collision was 84 yards inside the Ludgate junction down home-signals, and 637 yards inside Ludgate junction down Windsor distant-signal, and a red tail-lamp at this point could be plainly seen from an approaching engine on the down Windsor line for a considerable distance, but, owing to the curve, not so as to be distinguished from a light upon the parallel siding for over 100 yards at the outside.

The Ludgate junction down home-signals are slotted from Clapham east cabin, and by a mechanical lock the signalman in Ludgate junction cabin is prevented from pulling over the lever working his Windsor down distant-signal until the lever in Clapham east cabin working the slot on the Windsor down home-signal has been pulled over.

The line is worked upon the absolute block system under the rules in general use upon the London and South-Western Railway.

Under these rules the block instruments show the line as being normally clear, the semaphore arm of the block instrument in each cabin, worked from the cabin in advance, being placed in the danger position when the signalman in that cabin acknowledges the receipt of the departure signal given from the cabin in rear on a train passing forward into the section, and being lowered to the "All clear" position by the signalman in advance as soon as the train has passed his cabin. After the passing of the train and the lowering of the semaphore on the block instrument in the cabin in rear, the "All clear" signal is completed by giving three beats on the bell, and the signalman in the rear cabin is then entitled to lower his out-of-door signals for a second train, and these signals stand normally off.

In the signal-cabins near London, and as far out as Ludgate junction cabin, the London and South-Western Railway Company has recently adopted Sykes' interlocking apparatus, with which the signalman in the cabin in advance electrically locks the out-of-door home or starting signal at the cabin in rear, being prevented from releasing it until he has placed his own home-signal at danger behind the preceding train, and (when the whole apparatus is in use) until the preceding train has passed over a treadle on the line placed in some position inside the home-signal. Sykes' instruments without the treadles are in use for working between West London junction cabin and Ludgate junction-cabin, but not yet between the latter cabin and Clapham east cabin.

The following are extracts from the block telegraph rules pertinent to this enquiry.

General Rules.

Electric Train Signalling.

* * * * * *

2. The "All clear" signal is not to be given until the station at which a train has arrived is actually clear and ready to receive another train on the same line. It must be distinctly understood by signalmen that the lowering of the electric arm does not in itself denote an "All clear" signal. The "All clear" signal can only be acted upon when fully completed in accordance with note B of the electric bell code, namely, after the three beats have been given and acknowledged.

3. All signalmen, or other persons in charge of the signalling instruments, before giving the "All clear" signal, must take care to have seen the tail lamp or lamps of the train or engine after its arrival. This is to provide against danger in case any portion of the train may have become detached on the road, and applies more

especially to heavy goods and ballast trains. In the daytime a tail-lamp must be seen on the last vehicle on all trains and light engines.

4. No second train or engine is to be allowed to follow on the same line until the "All clear" signal of the previous train or engine has been received from the next signal station in advance, and acknowledged.

* * * * * *

Electric Bell Signals.

All signals must be distinctly repeated until acknowledged. No signal must be acknowledged until it is clearly understood. A signal is not considered to be complete until it is acknowledged, and it can only be recorded in the train signal-book when completed.

The following electric bell signals are to be used except where special signals are provided :—

One beat . acknowledgment (except for signals indicated by 6, 8, 9, and 12 beats).

Two beats . . } Departure signals for passenger and goods trains, also for light
Four „ . . . . } engines.

Five „ . . . . . Departure signal for ballast trains.

Two „ given twice . .—. . } Warning signals for passenger trains.
Four „ „ „ . . . .—. . . . }

Five „ given thus . .—. . . Warning signal for goods and ballast trains, also for light engines.

} See note A.

Three beats . . . "All clear" signal. See note B.

* * * * * *

Notes.

(Referring to the above bell signals.)

A. The "Warning" signal.—"A train coming" is to be given to the next station in advance when the departure of a train is signalled from the station in the rear.

B. The "All clear" signal.—When a train has arrived and has again been started from a station, or has been shunted clear of the line on which it arrived, and the station is therefore "All clear" for a following train, or when an "Obstruction danger signal" has been given and the line thereafter is "All clear," the signalman at such station will (after taking off the electric signal at the station in the rear) give the "All clear" signal, viz. :—

Three beats, which will be acknowledged by one beat.

* * * * * *

Special Instructions.

The receiver of an electric signal cannot alter it; the sender is alone enabled to reverse it. The signal once given remains fixed until the next signal be sent, and can therefore be referred to at any moment. It is also repeated on the indicator at the sending station as soon as it has been acknowledged.

The ordinary position of the electric semaphore or disc signals (unless specially ordered to the contrary) will be "All clear."

1. No train or engine is to be allowed to pass a station unless the electric signal for the section into which it is about to proceed stands at "All clear."

2. On the approach of a train or engine towards a station (that is, on its departure being signalled upon the bell from the station whence it is coming) it must be at once signalled to the next station in advance, by the warning signal, "Train coming," which denotes the description of train.

When a warning signal has been forwarded and it is afterwards found necessary to cancel such signal, the error signal must be sent to the station or junction

ahead, so that the previous warning signal may be cancelled, thereby permitting any crossing operations to be carried on at the junction or station in advance.

3. On the departure of a stopping train from a station, or on the passing of a non-stopping train, its departure to the next station in advance must be signalled in accordance with the bell code.

4. The signalman at the next station in advance will acknowledge this by placing the electric signal behind the train at "Danger," so as to prevent another train from following it into the section. This will be acknowledged by one beat, and the indicator on the bell in the box in advance will fly over to "On," denoting that the electric signal in the rear of the coming train in "On" at danger.

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Out-door Signals.

1. When the electric signal worked from another signal station is at "Danger" in any signalman's box, the out-door signals for the line or lines to which that electric signal applies must also be at "Danger."

2. After a train has left a station and until it has arrived at the next station in advance, and again left that station, the electric signal will be "On"; consequently the out-door signals which apply to the line on which the train has proceeded must also be at "Danger," and remain at "Danger" until the electric signal is taken off, denoting that the train has arrived at, and left, or passed the next station in advance.

3. After the "All clear" signal for any train is received from the next signal station, a second train may be allowed to follow.

Each of the two rear vehicles of the empty carriage train had two reservoirs for gas fixed to the underframes, each reservoir being capable of holding 26,901 cubic inches of gas, and, when charged to a pressure of 105 lbs. to the square inch, of supplying the gas lamps efficiently for 42 hours. Upon the 20th August the reservoirs had been fully charged, and only a small proportion of the gas had been used, as the lights had been burning for $2\frac{1}{2}$ hours at the outside.

Evidence taken August 24th.

John Edward Taylor states: I have been about 24 years in the service, and a signalman for about $21\frac{1}{2}$ years, and in West London junction signal-cabin for about 17 years. There are about 68 working levers in the cabin, and seven block instruments. During the day, from 5 a.m. to 11 p.m., there is an assistant signalman, and there is always a booking-boy. We work block in all directions, under the ordinary London and South-Western rules. Under these rules the line is cleared after the passing of each train, and stands clear. Recently Sykes' patent instruments have been placed in my box, which prevents my clearing the line until the home-signal has been restored to danger. On the 20th instant I came on duty at 7 p.m. for a 12 hours' shift, the ordinary shift being eight hours. One man was away on leave. Up to 10 p.m. I was acting as assistant, and at that hour the signalman left and I was in charge, assisted by a booking-boy. An empty carriage train was given "On line" to me from Queen's Road at 9.55 p.m.; it passed at 9.57, and I cleared back to Queen's Road at 9.58. I gave it on to Ludgate junction at 9.57, and the line was cleared from Ludgate junction at 10 p.m. The 9.50 p.m. down train to Feltham was given "On line" to me at 10 p.m.; it passed at 10.1, and I cleared back at 10.1. I gave it on to Ludgate junction at 10.1, and the line was not cleared from Ludgate junction till 7.32 the next morning. There was nothing unusual in either of the trains. Both of them had tail-lamps on, burning properly; I think there was one on the empty carriage train and two on the passenger train. The empty train was running very slowly, and the passenger train was running at the usual speed, about 10 or 15 miles an hour, I should think. I did not see either of the men on the engine of the passenger train as it passed. I did not notice whether steam was on or not. The Ludgate junction down distant-signal for the Windsor line is on a bracket-post (which also carries two up signals) on the down side of the Windsor line about 100 yards west of my box. I cannot say whether this signal was on or off when the passenger train passed. If I had looked I might have seen the Ludgate junction down home-signal, but I did not look. It was a clear night. According to the entry in the book the clock was at 10 a.m. one minute slow, when it was put right.

Henry William Blastock states: I have been 10 months in the service, and am booking-boy in West London junction box. My hours of work are from 2 p.m. till 10 p.m. The entries in the book produced, from which signalman Taylor has read extracts, were made by me at the time, and they are correct.

Harry Armstrong states: I have been 10 years in the service, and a signalman for one year eight months in Ludgate junction box. There are 51 working levers in the box, and six London and South-Western block instruments, with two London, Brighton, and South Coast instruments. There are always on duty in this box two signalmen and a booking-boy. On the 20th August I came on duty at about 9.55 p.m., to relieve signalman Viney as assistant to signalman Atkinson, who was in charge. It was my duty to attend to the down trains and Atkinson took the up trains. While I was signing on duty Viney took on the empty train from West London junction. This train is booked as having been given "On line" at 9.57 p.m. It passed after I was on duty at 9.58. It was running slowly and took some time to pass, so the line was not cleared back until 10 p.m. It is

booked as having been given "On line" to Clapham east at 9.58; that signal would have been given by Atkinson. I watched it past the box, but did not see it come to a stand. It had one tail-lamp on, burning properly. Signalman Viney, who took this train on, would have been the man who lowered the signals for it. We work block in both directions under the ordinary rules, and Sykes' instrument has been recently placed in the box for working between our box and West London junction-box. There is no treadle yet on the line, but unless the down home-signal had been placed at danger behind the train the line could not have been cleared to West London junction. The 9.50 down train to Feltham was given "On line" from West London junction at 10.1. My down Windsor home-signal was kept at danger and the distant-signal also. Signalman Atkinson was standing at the west end of the box, and I was standing at the east end of the box. He said, "Does that driver mean to stop? Down Windsor?" I was looking that way, and the moment Atkinson said these words I ran to the window at the east end of the box with a lamp showing a red light. I got on to the balcony outside and waved the light, and shouted as loud as I could to the men on the engine, "Whoa! Whoa!" When Atkinson spoke the engine was, as near as I can judge, near the down goods line signals, which were all at danger. By the time that I showed the red light towards the driver, the engine was getting near to the down Windsor home-signal. I cannot be sure that I saw the light of this signal to be at danger, but the repeater was at danger in the cabin. The repeater repeats the arm only and not the light. The engine continued to come forward, and passed the cabin when running at a speed of from 10 to 15 miles an hour. I kept on waving my lamp and shouting all the while. I got no response from the engine. I could not see what the men on the engine were doing. I think that steam was not shut off when the engine passed, but I cannot be sure. I cannot speak as to the state of the brakes. When I was on the balcony calling out to the driver, I saw the red tail light on the empty train. I knew the empty train was there, as it had not been cleared from Clapham east. I saw the collision. The speed of the passenger train did not appear to have been slackened at all. There was a crash, and almost at once there was a flash like a flash of lightning, and the gas blazed up at once. I went into the box and telephoned for assistance to Clapham east box. We first blocked all the lines. At the time the accident happened the down main home and down main distant signals were off for the 9.55 down train to Aldershot, which had been given "On line" from West London junction after the 9.50 train. Before the Aldershot train reached the down main home-signal it was thrown to danger by the Clapham east signalman, who slots this signal. The train stopped at the signal. Atkinson told me to go down and tell the driver to proceed, as there was no use his stopping there, and the down main line was not fouled. I went and told the two drivers of the train to go on to the next signals, but that we would not lower our signals. This train went on. When I was speaking to the drivers I saw that both the down home-signals were at danger and showing a red light. That would be about seven or eight minutes after the collision. I then went back to the box, and then went to give water to some passengers who were calling out for it. I think that the centre of the passenger train was about opposite to the box. I do not think that any part of this train was off the rails. At that time the carriages at the tail of the empty train were blazing. I did not go to the engine, but I took some water to where the guard was lying, opposite to the engine, between the Kensington and the Ludgate roads. The guard was then breathing, but he was quite naked. I did not lower the down signals for the Aldershot train. They were standing off. I am quite certain I did not lower the signals for the 9.50 train. The down home-signal is slotted from Clapham east. The down home-signal lever in our box has to be pulled before the down distant-signal lever. The red tail-lamp on the empty carriage train was in the usual place between the buffers.

Arthur Croker states: I have been in the service for one year and four months, and am booking-boy in Ludgate junction box. My hours of duty are from 2 p.m. to 10 p.m. The entries in the book produced, from which signalman Armstrong has read extracts, were made by me on the 20th August at the time. I saw the train passing, and it was running at 13 miles an hour, I should think. I cannot speak as to the steam or the brakes. I saw Armstrong showing a red light when the engine was approaching the home-signal. I cannot speak as to the position of the signals.

Thomas Atkinson states: I have been 19 years in service, and a signalman for about 17 years; in Ludgate junction box since November 1877. On the 20th August I came on duty at 6 p.m. for 12 hours, after 12 hours' rest. It is an eight-hour shift properly, but I was taking extra duty on account of one man being away. I was in the box, about the middle of the frame, when I saw the 9.50 train approaching. It was when it was near the goods home-signals that I first took particular notice of it, although I had seen it before. When I first saw it I did not think it was running too fast, but when it got near the goods home-signals I thought it was not going to stop, so I called to my mate. I said, "Look out! That man looks as if he was going to run past," or something to that effect. Armstrong jumped out of the window on to the balcony and started shouting "Whoa!" and showing a red light. Viney snatched up my lamp and went out at the other end of the box and did the same. The train did not pull up, and passed the box at a speed of from 10 to 15 miles an hour, as near as I can judge. I did not notice whether steam was off or on, or what was the condition of the brakes. I did not leave the box after the collision. I was just taking on the 9.55 train when the collision took place, but I immediately blocked the Windsor lines. At the time I saw the Feltham train approaching all the down Windsor line signals were at danger. At least, the levers were over and the repeaters were at danger. I looked at the signal after the collision, and I could see that the arm of the down Windsor home-signal was standing at danger, but I cannot be positive whether the back-light was showing green or not. When the Feltham train was approaching the down main home-signal was off. I did not see how the Clapham west down distant-signals were standing. I must have given the empty carriage train on to Clapham east, but I forget the time. It was not cleared from Clapham east. I saw the empty carriage train pass. It had a tail-light on in the usual place. It was a nice clear night. I could not see the driver or fireman of the Feltham train as the engine passed my box. It was a tank-engine running chimney first. It has a cab covering the footplate.

Frank Viney states: I have been nine years in the service, and a signalman for six years in Ludgate junction box. On the 20th August I came on duty at 2 p.m. and left at 10 p.m., being relieved by signalman Armstrong. I took on the empty carriage train from West London junction at 9.57. I pulled off the signals for it. I put the signals to danger behind it, but I did not clear the line. I was on the landing outside the box when the passenger train passed. It was running between 10 and 15 miles an hour. I showed a red light towards the driver of the passenger train from the balcony. I got out on the balcony at the Clapham end and Armstrong at the London end upon Atkinson calling out "They are going to run by, Harry," or words to that effect. We were showing red lights just before the engine got to the stop-signal. I could see by the repeater in the box that the down

Windsor stop-signal was at danger. I did not see the back-light of the signal. I did not see the light afterwards, as I was otherwise engaged. I went at once to help the people out of the carriages. I went first to the engine and then to the empty carriage train, finding no one in that train. I did not see the guard of this train at all. I saw the driver of the passenger train. He was on his engine, underneath the rear vehicle of the empty train, which was burning. There was a blaze directly after the collision took place. I did not help the man in the engine but went to help the passengers out. The down Windsor home-signal is slotted from Clapham east, but the lever is not bolted. We cannot pull off our down distant lever unless Clapham east has released the down Windsor home. There was a tail-light, burning properly, on the empty carriage train. It was at the level of the buffers on the left side of the train, I think. The hand-lamps which were shown to the passenger train were in the box ready lighted as usual, and we turned them to show red. When I put the down Windsor home and distant signals to danger behind the empty train I noticed that the repeaters went to danger. I did not notice them after that. I always make a practice of looking when I put the levers back.

Harry Page states: I have been 32 years in the service, and a signalman for about 25 years in Clapham east box. There are 66 working levers in the box, and always two men on duty and a booking-boy. No. 5 lever works the Clapham east down Windsor stop-signal; No. 4 works the slot on the Ludgate junction down Windsor home-signal and an indicator in that box; No. 3 works the Clapham east down Windsor distant-signal, which is on the same post as the Ludgate junction down home-signals. On the 20th August I came on duty at 6 p.m. for 12 hours. My proper shift is eight hours, but owing to one man being on leave it was temporarily a 12-hour shift. At 9.59 p.m. an empty carriage train was given "On line" to me from Ludgate junction box, and the slot on the Ludgate junction down Windsor home-signal was taken off for it. My down distant-signal for that line was kept at danger, and also my home-signal. The train was going into the yard, and the signal for going into the yard is No. 14. I offered the train to the yard shunting box, but the signal was simply acknowledged by one beat. If ready to receive the train, I should get two beats or four beats. As the train was not received I kept it standing at my signals. It arrived at about 10 p.m. When it was offered to me at 9.59 I put the block on. Ludgate junction box gave my the warning signal, two beats twice, for the 9.50 down passenger train at about 10 p.m. I acknowledged this signal by one beat. This signal would be forwarded on from Queen's Road. My lever working the slot at the Ludgate junction down Windsor home-signal was put to danger behind the empty train and remained at danger, and therefore my distant-signal lever was by the interlocking necessarily at danger. The carriage train stood for about two minutes before it was run into. My slot on the Ludgate junction down main home-signal was off, and my own down main home-signal was off. The through down distant for the main line, worked from the west box, was also off. I put my down main signal levers to danger on hearing of the collision. I got a telephone message from Ludgate junction, and the booking-boy in my box called my attention to the light from the conflagration. It was not very dark, and it was clear.

Samuel Hayes states: I have been a year in the service, and am booking-boy in Clapham east box. My hours of duty are from 2 p.m. till 10 p.m. The entries in the book which have been read out were made by me at the time.

Edward Tom Rabbits states: I have been 12 years in the service, and 11 years a signalman; six years in Clapham east box. On the 20th August I came on duty at noon for 10 hours as assistant signalman. My relief man was signing on duty when the collision took place. The levers working the down Windsor signals for our box were all at danger, and so were the repeaters, when the collision took place; the down main signals were off. I did not look at the back lights of the down Windsor signals either before or after the collision.

Henry Eager states: I have been about 35 years in the service, and a driver for about 18 years. I know the signals well between Waterloo and Clapham junction. On the 20th August I came on duty at 3 p.m. at Vauxhall. I was working through the day on the Hampton Court branch, and brought the 6.40 p.m. train from Hampton Court to Waterloo, arriving at 7.22 p.m. I then took the 7.55 p.m. train to Wimbledon, and came back with the 8.25 p.m. train. I then had to do shunting at Waterloo and take empties to Clapham junction. My duty would be over at about 1 a.m. My engine, No. 203, is a four-wheel coupled tank-engine with trailing bogie. I left Waterloo at 9.47 on the down Windsor line with a train of 18 empty coaches for Clapham junction. I was checked at Wandsworth Road and Loco. junction and Queen's Road. The West London junction signals and the Ludgate junction signals were off, but the Clapham east signals were at danger. I came to a stand at about 10 p.m. at the Clapham east down home-signals. We stood for four or five minutes, I think, when I felt a slight shock, but not much, as my brake was off. My engine was driven forward for about six carriage lengths, I think, and that was the first that I knew of anything being wrong. I cannot say how the Ludgate junction down signals were standing at the time. I did not look at the down main signals. I did not go back to the rear of my train, but remained upon my engine and went forward with 15 of my train to Wandsworth at 10.18 p.m. It was a clear night, and the Ludgate junction down Windsor signals were burning properly when I passed them.

Harry Lewis states: I have been 8½ years in the service, and a fireman for 3½ years. On the 20th August I was fireman to Henry Eager. I have heard his evidence read over, and it is correct. I did not look at the down main line signals while we were standing at Clapham east. It was a very clear night.

William Winterson states: I have been 20 years in the service, and four years signal linesman. My duties are to look after the signals and their connexions on a length which includes Clapham junction and Ludgate junction. I know that the down home-signals at Ludgate junction are slotted from Clapham east, and this slotting lever also bolts the levers of the down distant-signals in Ludgate junction box. I examined the signals at Ludgate junction on the 18th instant, and everything was in good order. I examined them again on Sunday the 21st instant, and they were still in good order. Nothing has been done to the signals or the frames at Ludgate junction or Clapham east since the accident. I have never heard any complaint as to the home-signals or their lights at Ludgate junction. I have never noticed that the down Windsor home-signal at Ludgate junction showed a dull green light. I know that it shows a good light if the specs are properly cleaned.

Edwin Hunt states: I have been in the service since 4th September 1884, and a fireman since 23rd July 1891. I know the signals well between Waterloo and Clapham junction. I have been working on the suburban service on both main and Windsor lines for about four months, all the time with driver Charles Betts, except upon odd occasions. On the 20th August we came on duty at 2 p.m. at Vauxhall, to work till about 1 a.m. We did not commence running till 3.53 p.m., and had several

short intervals of rest during the day. The engine, No. 374, is a four-wheel coupled tank-engine, with a leading bogie and trailing radial wheels. We were attached to the 9.50 p.m. down train from Waterloo to Feltham, chimney first, and I heard my mate say we had 13 coaches on. The automatic vacuum-brake was working through the train in connection with the steam-brake on the coupled engine wheels. The steam-brake on the engine and the automatic vacuum-brake on the train are applied by the same handle. It was a fine, clear night. We started about right time, I think, and we stopped at Vauxhall and Queen's Road, and the next stop would have been at Clapham junction. The West London junction down home-signal was off for us, but I did not see the West London junction down distant-signal. I did not see the Ludgate junction down distant-signal, but I saw the Ludgate junction down home-signal, for the Windsor line off for us. It was showing a green light, but not very clear, as it is always a dull light. I do not know whether my mate has ever reported it as a bad light. It was not showing a light half red and half green; whatever it was showing was green. Our signal was the right-hand of two arms on a bracket-post, the left-hand signal being the main line down home-signal. I did not look at the main line signal, and cannot say whether it was on or off. I did not look at the down distant-signal worked from Clapham east, which is a lower arm on the same post, and I cannot say whether it was on or off. I did not look at Ludgate junction box, and did not see any red lights shown from the box. We were running with steam on between West London junction and Ludgate junction boxes, and got up to a speed of between 15 and 20 miles an hour. I saw the Ludgate junction home-signal off for us when about half way between West London junction and Ludgate junction. I made sure it was off, and then looked away. I was in the act of putting the injector on, and had pulled the feed open, and by that time was past the signal and about opposite to the box. I was on the left-hand side of the engine, and I could not see the line ahead very well from my side. I did not see any red light upon the line ahead of us. I had no warning whatever of the collision. I was looking ahead through the window in the cab, with my back to my driver, when the collision occurred. My driver said nothing to me before the collision. I should think steam was still on when we ran into the other train, but I cannot be sure that my driver did not shut off steam. I felt no application of the brake, but I cannot say whether or not my driver applied it. I am sure steam was not shut off and the brake was not applied when we passed the Ludgate junction signals, but what happened after that I cannot say. I was not knocked over by the collision. The moment after we struck the other train there was a flash like a flash of lightning, and a blaze of fire at once. One of the coaches of the empty train was right on the top of our engine. I think the top of the cab was broken in. The carriage caught fire at once. I think the front end caught fire first and the fire burnt back towards us. I was not burnt myself, nor was my mate, as far as I know. As soon as we stopped I got out of the cab on my side, and walked round the back of the bunker, and then in again to my mate. He was shouting to me, but there was such an escape of steam that I could not hear what he was saying. He then made motions to me, as I thought, to throw the fire out. I tried to get the fire-irons, but could not get at them. I then got down on the right side, and left my mate on the footplate. I stood alongside the engine. The first I saw of the guard of the empty train was two or three minutes or more afterwards, when I saw him on the ground near the front of the engine on the right side, with some people round him rubbing his clothes to put out the fire. I do not know how he was got out of the wreck. I did not see the Clapham west down distant main line signal, which is a bracket-signal, some distance ahead of the Ludgate junction home-signals. I did not see the 9.55 down main line train. I saw a Brighton engine on the down Brighton line with, I think, a goods train behind it. There was no one on the engine but my mate and myself before the collision. After I got off the engine another driver named James got on the engine and advised my mate to get off and go to a doctor. He got off and kept on saying he was all right, and did not want to go to a doctor. I do not think our speed was at all reduced before we struck the other train. As you are approaching the signals are pretty plain, but when near to them they are some way off to the left, and you have a sideways view of them. I went away with my driver to a doctor, and when I came back I stood for some time while the fire was being extinguished, and got up and assisted to rake out the engine fire. When I got down I saw guard Churchill, the guard of our train. He said to me, "What did I make of the affair?" I said, "What can I make of the affair when the signals were off for us?" He replied, "I "think he found out his mistake when it was too late. "I put my head out of the window on passing the "signal and saw the signal go up." That is all he said, and I said, "I can't do any more good here, and I am going home." I asked him the time and he said it was 12.30 o'clock. When I was on the engine, after taking my driver to the doctor, I found the reversing lever in back gear, and it was jammed so that I could not move it. I cannot say anything about the brake handle. I heard no shouting as we passed the signal-box. The engine was running quietly at the time, and I could have heard if there had been any shouting.

William Beer states: I have been 10 years in the service, and a guard for five months. On the 20th August I came on duty at 1.30 p.m. to work till 11.30 p.m. I know the signals between Waterloo and Clapham, but have had only five months' experience of them. The Ludgate junction down home-signals are on a bracket-post with three arms above and one distant-signal arm underneath. On approaching from London the Windsor line down home-signal is the right-hand arm. I was assistant guard of the 9.50 p.m. down train to Feltham. I do not know how the train was made up, but I think there were 12 vehicles in it. I was riding in the rear van. I did not see any of the signals after leaving Queen's Road, as I was busy squaring up my luggage. I had no warning of the collision until I was knocked over by the shock. I do not think the brake was applied. If it was it must have been only just before the collision. I did not feel that the speed was checked at all. I estimate it at from 12 to 15 miles an hour. I went back at once to West London junction to protect the train. The train was well filled. After leaving Queen's Road the brake-gauge was showing 15 inches of vacuum. I did not hear the valve fly up before the collision.

Evidence taken September 5th and 8th.

Charles Betts states: I have been in the service since April 1879, and a driver since June 1879. I am well acquainted with the line and signals between Waterloo and Clapham junction, as I have been driving suburban trains ever since I entered the Company's service. On the 20th August I came on duty at 2 p.m. at Vauxhall to work through the day on the suburban lines, my last train being the 11.12 up train from Feltham, due at Waterloo at 12.4, after which I would have to run light to Nine Elms. On my previous tour I left duty at about 12.15 a.m. after about 10 hours' duty. My engine, No. 374, is a four-wheel coupled tank-engine, with a leading bogie and radial trailing wheels. I was attached to the

9.50 p.m. down train to Feltham. It was a block train of 13 vehicles, fitted throughout with the automatic vacuum-brake, which is applied by the same action as that which applies the steam-brake, working blocks on the coupled wheels of the engine. The brakes were in very good order. They were used at Queen's Road and Vauxhall. I had 18 inches of vacuum. We started at right time, and stopped at Vauxhall and Queen's Road, the next stop being at Clapham junction. After leaving Queen's Road, the starting-signal there being off, I found the West London junction distant, home, and starting signals off for me. They were off when I first sighted them. The down distant-signal for the Windsor line, worked from Ludgate junction, was off, and so was the home-signal for that line, as soon as I sighted it. I did not see a single red signal-light that night for the line on which I was running, until I sighted Clapham east distant and home signals, which were at danger. I could see the Ludgate junction home-signals from West London junction. There is a better view of them there than there is when half way between the junctions, but still they are visible all the way. I cannot say whether the down main signal at Ludgate junction was on or off. I was not looking at it. I know the Clapham west down main line distant-signals, which are some distance west of the Ludgate junction home-signals. I did not notice how they were standing, but I am perfectly sure that I did not mistake one of those signals for my signal. I know the signals far too well to have done that. The down Windsor line home-signal at Ludgate junction was showing a perfect green light. It was a clear night. The signal was off as long as I could sight it, which would be until I was close to it. I saw a red tail-light ahead of me when I was about half way from West London junction, but I thought it was upon a train in the siding. I did not see that it was on my own line until I struck it. I was running between 15 and 20 miles an hour at the time, but I had just shut off steam for the stop at Clapham east home-signal. I shut it off just before passing Ludgate junction signals. My brake was not applied; at least, I do not remember applying it. I was considerably shaken, and was thrown up on to the tank. I have also lost the fore-finger of my left hand, and have been badly cut. I am still in the doctor's hands. I cannot remember what happened after the collision. I was riding on the right side of the foot-plate. I did not see any red lights shown from Ludgate junction box, nor did I hear any shouting. I might have missed seeing those red lights, as I was sitting up on the seat looking ahead, if they were not shown until I was near the box; if shown some distance off I must have seen them. My eyesight was last tested about a year ago, and I can see perfectly well.

William Churchhill states: I have been 20 years in the service, and a guard for over 15 years. I know the line and signals between Waterloo and Clapham junction very well. On the 20th August I came on duty at Waterloo at 2.20 p.m. to work till 12.4 a.m. On my previous tour I left duty at 12.4 a.m. after the same hours of duty. I was guard of the 9.50 p.m. down train to Feltham on the Windsor line. It was a block train made up as follows:—tank engine, one third-class brake-carriage, one third-class, two second-class, four first-class, two third-class, one composite, and rear brake-van, the whole train being fitted with the automatic vacuum-brake in good order. I was riding in the front brake compartment, next to the engine. We started at 9.51, and stopped at Vauxhall, and Queen's Road, leaving Queen's Road at 10 p.m., one minute late. The starting-signal at Queen's Road was off. As soon as we started I saw that the West London junction down distant-signal was off. A few yards further on I saw that the West London junction down home-signal was off. I did not see the Ludgate junction down distant-signal, as I was examining my parcels. I did not sight the Ludgate junction down Windsor home-signal until I was within a few yards of it, when it was nearly abreast of me. It was standing at danger. I did not notice the signal for the main line on the same post. At that time we were running from 18 to 20 miles an hour. I went to apply the continuous-brake on seeing our signal at danger, but before I could do so the collision occurred. I think the brake-valve in my van flew up just before the collision occurred, but the speed of the train was very little reduced. I was thrown against the brake-wheel and was injured, and then pitched back on to a milk churn. I got out and was able to give assistance. It was not so full a train as usual. No passenger complained to me of injury. I went first to the empty train, as I did not know if it was a loaded train or not. Someone then called out from the opposite side of of the train to know where the guard was. We searched for him under the carriages, and among the wreckage on the top of the engine, and could not find him. There were several shunters about and inspector Sanders, so I went back to look after my passengers. None of my train left the rails. I noticed that my brake-gauge was showing 18 inches of vacuum after leaving Queen's Road. There was no sudden blaze immediately upon the collision, but not for one or two minutes afterwards, and I should say that the carriages did not begin to blaze for five or six minutes. When I walked forward past the engine to the empty train I saw no fire. I was riding on the near side of my brake-compartment. I did not see the signal-cabin before the collision, and neither saw any red lights shown nor heard any shouting. I saw no tail-light; the engine would prevent me from doing so. I did not speak to my driver after the collision. I spoke to the fireman I should say two or three hours afterwards. I asked him what the driver had to say about the signals. He told me that the driver said they were off. I told him that the stop-signal was on when I saw it. He said nothing more. I said nothing about it having been put up too late. It is doubtful if I would have heard any shouting from the cabin if there had been any, as my window on the right side was shut.

Alonzo Greenham states: I am a stonemason, and reside close alongside the place where the accident happened. I heard the collision when by the Latchmere bridge. I got up the bank and went straight to the place. I found that one or more carriages were on the top of the engine of the Feltham train, and that some smoke was rising. I ran round the carriages of the Feltham train and told the passengers to jump out. I then went to the engine and found the guard lying on the top of the engine, below the bottom of the carriage. He was not jammed among the wreckage, but his clothes had caught fire. I got him on to the ground, and we got his clothes off. Others then came to assist. It must have been five minutes nearly after the collision that I found the guard. Both his legs appeared to be broken, and he was unable to get down from the engine. He was quite conscious. The carriage which was on the engine had caught fire before he was extricated. I was myself burnt and otherwise injured.

William James Sanders states: I am a traffic inspector at Clapham junction, and upon the 20th August I was the first servant of the Company to arrive at the scene of the accident. I first spoke to the driver, and asked if anyone was injured, and then spoke to guard Churchill, and then went to the signalman, and from five to eight minutes after the collision on going back towards the engine I saw guard Weblin drop off on to the ground. I did not see anyone helping him off. The two carriages on the Clapham side of the engine were burning when I got there, and the one on the top of the engine had just caught fire.

Conclusion.

The evidence as to the cause of this fatal collision is very conflicting, but as to the facts of the case it is perfectly clear.

At 9.47 p.m. a train, consisting of tank-engine and 20 empty passenger vehicles, left Waterloo for the carriage sidings at Clapham junction, to which place it ran upon the down Windsor line, the guard in charge, George Weblin, being in the brake-compartment of the rear vehicle, a third-class brake-carriage.

This train passed West London junction signal-cabin at 9.57 p.m., and Ludgate junction signal-cabin at about 9.58 p.m., but, as the carriage sidings at Clapham junction were not ready to receive it, it was brought to a stand at the down home-signals at Clapham east signal-cabin at about 10 p.m. In this position, owing to the shortness of the section between Ludgate junction and Clapham east, the tail of the train was only 84 yards inside or west of Ludgate junction down home-signal, and 35 yards west of Ludgate junction signal-cabin.

Immediately the train had passed the latter cabin the "All clear" signal was given in the usual manner, and in accordance with the regulations, to West London junction, the time at which this signal was actually sent being 10 p.m.

At 9.51 p.m. the 9.50 p.m. down passenger train to Feltham, consisting of tank-engine and 12 passenger vehicles, fitted throughout with an automatic continuous-brake, left Waterloo, and, after stopping in ordinary course at Vauxhall and Queen's Road, left the latter station at 10 p.m., one minute late, being in charge of two guards, the head guard in the brake-compartment next to the engine, and the under guard in the rear vehicle. The train was given "On line" from West London junction to Ludgate junction at 10.1. p.m., passed Ludgate junction at about 10.2 p.m., travelling probably at nearly 20 miles an hour with steam off, and ran into the tail of the empty carriage train with the speed hardly, if at all, reduced, the brake, judging from the evidence of the driver and fireman, not being applied until it came automatically into action after the collision.

No vehicle in the Feltham train left the rails, and the effect of the collision, so far as the passengers and the rolling-stock of this train were concerned, was not nearly so serious as might have been expected. It was, however, far otherwise with regard to the empty train, which was driven ahead for about 28 yards, for the rear vehicle, or the one immediately in front of it (it is not certain which), was thrown up on the top of the engine, and, owing to a conflagration, which followed upon the gas reservoir under one of the carriages being broken into, was, with two other carriages, almost entirely consumed. The unfortunate guard was terribly injured, first by the collision and afterwards by the burns which he sustained before he was released from the position into which he had been thrown on the top of the engine. He does not appear to have been jammed among the wreckage, but both his legs were broken, and, although said to have been conscious, he was unable to get down from the engine, where he remained under the burning carriage for nearly five minutes, when, according to one evidence, he was seen to fall off, and, according to other statements, he was lifted to the ground by a bystander who had come to give assistance. It is rather remarkable that he should have been left so long in this perilous position, but, although search is said to have been made for him, he had not been found.

So far all the statements made agree in nearly every particular, but the evidence given by the driver and fireman of the Feltham train on the one hand, and by the signalmen on the other, as to the state of the signals at Ludgate junction is absolutely irreconcilable.

As to the main line signals there is no doubt that the down home and down distant signals at Ludgate junction were off for the 9.55 p.m. down train to Aldershot, and that the down distant-signal for the through main line, worked from Clapham west box, being the right-hand signal of two upon a bracket-post, 210 yards west of Ludgate junction down home-signals, was also off; but the driver and fireman of the Feltham train declare most positively that the down home-signal for the Windsor line, which is the right-hand of the two home-signals on a bracket-post, was showing a green or an "All right" light, while the driver says that the down distant-signal, which the fireman did not see, was also off. He avers that he knows the signals far too well either to have mistaken the main line down home-signal at Ludgate junction, or the Clapham west down distant-signal, for his own. On the other hand the signalman at Ludgate junction, and two assistant signalmen, one of whom was just leaving duty, maintain that the signal levers and the repeaters in the cabin showed the signals to be at danger, while the signalman says that he saw the arm itself at danger, and there is no doubt that the light on the home-signal was burning properly when the engine of

the empty carriage train passed about two minutes previously, and when it was looked at a few minutes after the collision by one of the assistant signalmen, on his going out to speak to the driver of the 9.55 p.m. down train to Aldershot, which had been stopped by the main line signal being thrown to danger.

The evidence of the signalmen in Ludgate junction signal-cabin is corroborated by that of the signalman in Clapham east signal-cabin, without whose concurrent action neither the home nor the distant signal at Ludgate junction can be taken off, for both he and his assistant assert that the lever in his cabin controlling the Ludgate junction signals was in the danger position. It is not disputed that his own Windsor line down signals were at danger, and that the driver had shut off steam, preparing to stop at the Clapham east down home-signal.

Again, it is certain that the Ludgate junction down home-signal for the Windsor line had not been left standing off after the arrival of the empty carriage train, for the electrical arrangements in this cabin are such that the signalman is obliged to put the home-signal to danger behind a train which has arrived, before he can give the "All clear" signal to allow a second train to leave West London junction, and there can be no doubt that this "All clear" signal was given.

The rear guard did not see either of the signals, and the front guard says that the home-signal was at danger when he first sighted it, when, close alongside it, although there is a statement by the fireman, supported by the statement of a platelayer made since my enquiry, but contradicted by the guard, to the effect that the guard had said on the night of the collision that he had seen the signal off.

In face of the evidence it is impossible to avoid the conclusion that the Ludgate junction down home-signal, and, consequently, the down distant-signal, for the Windsor line were at danger, and that the collision was due to the home-signal having been passed at danger by the driver of the Feltham train, who, principally, with his fireman in a secondary degree, must be held responsible. If it had not been for the driver's positive statement that he knew the signals so well that he could not possibly have mistaken any of the main line signals for his own signal, I would have been inclined to think that he had overlooked the light of that signal, and had taken for it the light of the Clapham west down through distant-signal, which is in a somewhat similar position 210 yards ahead, and which was off; but, as it is, I am, as the only alternative, obliged to conclude that the reason for his passing the Ludgate junction home-signal at danger, and for omitting to see the red hand-signal lights, which, according to the evidence of the three signalmen and a booking-boy, were waved from Ludgate junction cabin, was that he was not keeping a sufficiently good look-out. It is, however, easy to understand how, although he saw the red tail-lamp on the empty carriage train when a considerable distance from it, he failed to realise that it was upon the down Windsor line, for this line is on a curve nearly up to the Ludgate junction signals, and there is a siding alongside it. The fireman may be excused for not seeing the distant-signal, as he was, by the order of his driver, attending to the fire, but he ought to have seen the danger signal at Ludgate junction home-signal, and both the guards ought to have been looking out for the signals, having it in their power to pull up the train if they saw that the signals were against them.

The driver and fireman had been on duty at the time for eight hours, after a rest of $13\frac{3}{4}$ hours, the head guard for seven hours and 40 minutes, and the rear guard for $8\frac{1}{2}$ hours.

The eyesight of the driver and fireman, which had last been tested in 1891, has been again tested at my request, and the medical report shows that it is good.

The giving of the "All clear" signal to West London junction to allow the Feltham train to approach is stated by the signalman, and is admitted by the responsible officers of the Company, to have been justified by the rules and practice, but it seems to me that, whatever may be the practice, it is a little doubtful whether, under the circumstances, it was justified by the rules, if strictly read. The rules are to the following effect:—"The 'All clear' signal is not to be given until the station at "which a train has arrived is actually clear, and ready to receive another train on the "same line." * * * "When a train has arrived, and has again been started "from a station, or has been shunted clear of the line on which it arrived, * * * "the signalman at such station will (after taking off the electric signal at the station "in rear) give the 'All clear' signal, viz., three beats." * * * Now, from these rules it is clear that if the empty carriage train had been standing at the platform of a station, the signalman at Ludgate junction would not have been justified in sending the "All clear" signal to West London junction, and I am unable to find any regulation enjoining a different practice at ordinary block signal-cabins to that laid down for stations. It is true that in the rules for working the block system with

Sykes' instruments, in use in this cabin, there is a rule to the following effect:—"The "man at X (when he is satisfied that the preceding train from S, with the tail-lamp "on the last vehicle, has arrived at his block section and has passed on, and that the "section from S to X is clear for the train he is about to accept), must reply by "pressing in the plunger of the Sykes' instrument with a slow and deliberate motion, "which will cause his own plunger indicator to drop to *white*, unlock the signal at S, "and exhibit the word "Free" on the dial placed over the signal-lever in S's cabin. "* * * Immediately after plunging, the signalman at X must acknowledge the "bell-signal, and then pull off his home and distant signals if clear in advance."

This rule is, however, supplementary only to those quoted above, and it is not contended that it in any way alters the conditions under which, *at a station*, the completed "All clear" signal is to be given.

However, whether in this case the giving of the "All clear" signal was, or was not, in accordance with the strict reading of the rule, I have no hesitation whatever in saying that, according to my judgment, no time should be lost in so altering the rules as to make it quite clear that, under no circumstances, should the "All clear" signal be given for a second train to follow one which, as in this case, is standing only a few yards ahead of the home-signal, although clear of the actual block section.

When block-working, or the preservation of an adequate interval of space between following or converging trains, was first instituted, it was, no doubt, the common practice to permit the giving of "Line clear" immediately a train had passed the home-signal, or when shunting was going on close inside that signal, but experience showed that something more than a clear block section, from the starting-signal at one block cabin to the home-signal at the next, was necessary, and that some margin of safety must be provided for. The rule as to the conditions under which "Line clear" or "All clear" can be given (which is the essence of the system) varies very much. Upon some railways it is not allowed to be given until the first train is proceeding upon its journey, and has run a quarter of a mile beyond the home-signal; upon others the margin is somewhat less; upon others the line is cleared as soon as the train has passed the signal-cabin; and upon one line at least there is a different "clearing point" fixed for each station, inside the home-signal, varying in position according to the conditions of the line, and "Line clear" is given if the line is clear as far as this "clearing point."

It is much to be desired that the practice in this respect should not only be safe, but should be uniform throughout the kingdom, and the Board of Trade has recently communicated with the Associated Railway Companies with the view of securing a careful consideration of the subject.

I have, &c.,
F. A. Marindin,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Details of Damage to Stock.

No. 10 block, forming 9.50 p.m. Train to Fetham.

Engine No. 374.—The weather-board, cab, and glasses, steam-pressure and vacuum-gauges, whistles and fittings, injector steam-pipes, dome and safety-valve cases, lagging-plates, hand-rails and pillars, chimney, smoke-box front and door, two buffers, tool-boxes, lubricators and pipes, and four lamp-irons require renewal; two sand-spindles and buffer plate damaged.

No. 499 third-class.—End of body damaged; end light broken; quarter light broken.

No. 245 third-class.—Body slightly damaged; door glass broken; quarter light broken.

No. 184 second-class.—Sole split.

No. 428 first-class.—Two soles split.

No. 425 first-class.—Sole split.

No. 426 first-class.—Buffer driven up.

No. 241 third-class.—Cross bearer broken.

Empty Train to Clapham Junction.

No. 254 third-class brake,—Destroyed by fire.

No. 419 third-class.—Destroyed by fire.

No. 878 third-class.—Destroyed by fire.

No. 565 third-class.—Seven quarter lights broken; both ends of body broken; headstock broken; three step-boards broken; three step-irons broken; brake work damaged.

No. 799 third class.—One end broken in; three quarter lights broken; two step-boards broken.

No. 119 compo.—Body shifted.

No. 954 bogie third.—Body shifted.

No. 92 compo.—Body shifted; quarter light broken.

No. 547 third-class.—Screw-coupling broken.

No. 695 third-class.—Two buffer angle-castings broken; quarter light broken.

Damages to Permanent Way.

Twelve 40-lb. chairs, seven check-chairs, and two slide-chairs, broken; two rails bent; several point rods and rollers broken.

Printed copies of the above Report were sent to the Company on the 17th October.

LONDON, CHATHAM, AND DOVER RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
16th July 1892.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 4th instant, the result of my enquiry into the circumstances attending a collision, which took place on the 30th ultimo, at Sheerness Dockyard station, on the London, Chatham, and Dover Railway.

In this case the 12.45 p.m. up train from Sheerness-on-the-Sea to Sittingbourne, (consisting of tank-engine, running chimney in front, one second-class brake-carriage, two third-class, one first-class, and two third-class carriages, and rear brake-van), when entering the Dockyard station at 12.49 p.m., overran the proper stopping place at the platform by about 26 yards, and came into collision with, and damaged, the buffer-stop at the end of the line.

No part of the train left the rails.

The driver of the train was rather badly hurt, and nine passengers are returned as having been shaken and otherwise injured.

The following were the damages to the rolling stock:—

Third-class carriage No. 184.—Door light broken.
„ „ No. 92.—Axle-box and four quarter-lights broken.
„ „ No. 279.—Buffer-rods bent.
Brake-van No. 64.—Body shifted.

Description.

Sheerness Dockyard station is the original terminal station of the branch line from Sittingbourne, and trains between Sittingbourne and Sheerness-on-the-Sea, the present terminus, run into the Dockyard station, and out again after the engine has been run round the train.

The junction of the single line from Sheerness-on-the-Sea with the single line from Sittingbourne is a little over 125 yards outside the Dockyard station, and about halfway from this junction to the station is the junction of the two platform lines, both of which are signalled and used for arrival and departure.

The line is nearly straight and level from the junction to the buffer-stops.

The following distances outwards from the buffer-stops should be noted.

To the point where train engines should stop	26 yards.
„ „ outer end of the station roof	31 „
„ „ „ „ „ proper down platform	136 „
„ „ junction of the two platform lines	195 „
„ „ signal-box	195 „
„ „ junction of the two single lines	261 „

The following are extracts from the instructions as to the use of the Westinghouse-brake upon this line.

"*Drivers* must always satisfy themselves that the brake-coupling on their engine is properly connected to that on the train, and that the cocks on the brake-pipe, except the one at the rear of the last vehicle connected with the brake, are open."

* * * * * * *

"In running into terminal stations with buffer-stops, and at junctions where he has to stop, and also when moving up to attach his engine to a train, the driver must not rely upon the continuous-brake, but must so regulate the speed of the engine that the ordinary application of the hand-brake on the engine or tender will be sufficient to bring the train or engine to rest."

* * * * * * *

"*Guards.*—Before leaving the terminus, after adding to a train on the journey, or on another engine being attached, the rear guard must ascertain whether the couplings are connected, and the cocks on the brake-pipe are all open throughout the train,

by applying the brakes from his van and seeing that they are released from the engine . . . . . ."

* * * * * * *

"*Shunters and Porters* when making up trains, or attaching carriages, must always open the cock on the brake-pipe at the end of each carriage after connecting the hose couplings, except the one at the hind end of the last vehicle in the train, and always close them before separating the coupling."

Evidence.

John Hope states: I have been 36 years in the service and a driver for 34 years, driving on the Sheerness branch for 30 years altogether. On the 29th ultimo I came on duty at 6 a.m. at Sheerness, to work on the branch, backwards and forwards, till 5 p.m. That is my regular day's work for six days in the week, and I had gone off duty at 5 p.m. on the previous day. My engine, No. 81, is a tank-engine with leading and driving wheels coupled, and fitted with the Westinghouse brake working blocks upon the four coupled wheels. I was attached to the 12.45 train from Sheerness-on-the-Sea, which had to run into Sheerness Dockyard station, and then out again to Sittingbourne. There were seven vehicles in the train, all fitted with the Westinghouse brakes. That is the regular train through the summer months, except upon Saturdays, when there is one more vehicle on. We started at about right time. I had used my brake during the morning with the same train, and it had worked properly. I had arrived at Sheerness-on-the-Sea at about 12 o'clock. I got round my train there after pushing it out, and set it back to the platform. A man named Jones coupled my engine on. I thought the brake was properly coupled on. I backed on to my train, and I had then about 50 lbs. pressure of air on my engine-brake. When I was coupled on I found that I could not move the train back, so I told Jones to pull the string on one of the coaches. He did so, and that released the brake on that one coach, and then I was able to set the train back. My donkey-engine was working before I started. There was a new pipe or washer put on a van which was standing in the station against the buffer-stop. This van was attached to my train to try the new washer. This was done by means of the air which was in the train, and that used the air up as they did not get any from me. The van was detached again before we started. The engine did not start very nicely. I thought she was on the centres, but I told my mate to get down and pull the string on the carriage next the engine, as I thought the brake was on this carriage. He got down and did this, but he said there was no air in it. He then got up again. I did not tell him to examine the cock. I was under the impression that it was open. I then started quite easily, believing the brake was right through the train. My donkey was working, and my pressure increased to nearly 70 lbs. There was nothing in the way the pressure increased, to make me suspect that the brake-pipe between the train and engine was not open. I came up to the junction at rather less than my ordinary speed, and the signal was off for me to run into the usual side of the platform. I think my speed when passing the signal-box was under five miles an hour. I had shut off steam on the curve at the usual place. The proper place to stop is short of the points leading on to the table, but with that train, when the points are lying right, I usually run a length further up to within an engine length of the buffer-stop, as another engine comes on at the other end to take this train out. I did not want to use my brake at all until the very last, but when about four engine lengths from the stops I applied it, my speed at the time being under four miles an hour. It acted properly on the engine, but the train did not pull up, and I struck the stops when my speed was, at the most, three miles an hour. I remained on the engine when I found the brake was not acting upon the train, which was pushing up my engine. I stepped across to reverse the engine, and when the collision occurred the handle of the Westinghouse brake struck me on the side, and injured me. My fireman was not injured, and my engine was not damaged. After the collision I got off on to the platform, but soon found that I was too much hurt to go and examine the brake-pipe. The brake was not tried from the rear van before we started, at least there was no indication on the engine. Supposing the brake was properly coupled up, there would be an indication if the brake were tried, and it would be necessary for me to release it. It is the rule for the brakes to be tried whenever there is a change in the make up of the train. It is generally done, but not always. I did not get off my foot-plate to see if the brake-pipe was properly coupled up behind the engine. In my opinion the hand-brake only should be used when shunting the empty train out at Sheerness-on-the-Sea, and not the Westinghouse brake.

William Clift states: I have been about 14 years in the service, nine years a fireman, and a passed driver for 16 months. I have been working on the Sheerness branch with driver Hope for about 15 months. On the 29th ultimo I was working through the day with Hope with the same train of carriages, and, so far as I know, the brake throughout was in good order. After we arrived at Sheerness-on-the-Sea, at about 12 o'clock, I went to get my dinner, and when I rejoined the engine the train was back at the platform, so I know nothing about the coupling on of the engine after it ran round the train. I knew that the carriage examiner was working at a van which was at the rear of our train, doing something in connection with the brake-pipe. I then as usual got under the engine and oiled it. I got on to the footplate about five or six minutes before starting time. My driver was off the engine at that time. He had had his dinner, and I think he had gone down the platform to send a letter away. As he was coming back I started the donkey-engine and pumped up to about 65 lbs. pressure of air. It was then time to start, the guard blew his whistle, and the signal being off, we tried to start the train. It would not move, so my driver said, "Get down and have a look, "as the carriage examiner has been at work, and see "if that brake is on." I got off into the 6-ft. way and pulled the cord of the second-class brake next the engine, but there was no air to escape. I saw the guard further back pulling strings and the train then started, and I got up on to the footplate. It did not occur to me to look at the cock behind the engine, which was running chimney first. The signals were off for entering the Dockyard station, and we came past the signal-box at a speed of eight or nine miles an hour, no faster than usual, if as fast. Steam had been shut off at the usual place. At the outer end of the platform I applied my hand-brake and continued to screw it up as we ran along the platform. My mate went and applied the Westinghouse brake just before we came under the roof, when our speed was about five miles an hour. My brake was then hard on. I soon found that the brake was not acting upon the train. My driver was reversing the engine when we struck the stops. I think the speed was

about the same as it was when the driver applied the brake. I was not injured. I got off, and the foreman said, "What's up now?" I said, "I don't know, there is something wrong," and he then looked and said that the taps were shut. I saw myself that that was the case. When the pipes were disconnected there was no air to come out. As far as I know, the brake was not tested before we started from Sheerness-on-the-Sea.

Arthur Cheverst states: I have been two years in the service as porter, at Meopham first, and then at Sheerness for nearly a year. I occasionally act as guard upon trains between Sheerness-on-the-Sea and Sheerness Dockyard, and on to Sittingbourne. On the 29th June I came on duty at 8.30 a.m., to work till 9.35 p.m., with an hour off for dinner, and half an hour for tea. I work most of the time as porter at Sheerness-on-the-Sea. That is my regular day's work for six days in the week. I acted as guard of the 12.45 p.m. up train, but only as far as Sheerness Dockyard. It was made up as follows:—Tank-engine, one second-class brake, two third-class, one first-class, and two third-class carriages, and rear brake-van. After the engine had gone round the train, upon arrival from Sittingbourne, the train was backed to the platform again. There was a van standing behind the train against the stops, and the carriage examiner was putting a new washer on the brake-pipe. After doing this he attached the van to the train to test the pipe. I saw him doing this. He had the van attached for about a minute, and then uncoupled it. When the train was ready to start I gave the signal, but the train did not move off. The driver called back from the engine that the brakes were on. I went and pulled the string in two carriages, and another porter pulled one. There was the usual escape of air when I pulled the strings. I did not see the fireman pulling any strings. The train then started, about two minutes late, and I got into the van. I did not test the brake. I know that, according to the rules, I should have done so, but, seeing the driver use the brake when bringing the train back, I thought all was right. When approaching the Dockyard station I thought when we got below the signal-box that the speed was higher than usual. I should say it was between 9 and 10 miles an hour. I had put my hand-brake on before arriving at the signal-box, as usual, and it was hard on. I estimate the speed at seven or eight miles an hour when we struck the buffer-stop. I was rather shaken. I should think there were 30 or 40 passengers. I do not know how many were injured, but I saw that some were cut and bruised. None of the carriages left the rails. I did not examine the brake connections after the collision. The collision took place at about 12.50, or a little sooner. When the train was being backed to the platform at Sheerness-on-the-Sea I was standing close to the buffer-stop. The driver applied the brake from the engine, and pulled the train up sharp, about 1½ yards from the loose van, and then backed on to the van. I am positive that the blocks came on to the carriage wheels when the driver applied the brake, and were then released, so that the train could back on to the van. Jones was calling the train back. This was about 20 minutes before starting time. The engine was not uncoupled from the train. The brake did not act throughout the train when running into the Dockyard station; at least the blocks were not on the wheels of the carriages when I got out.

Thomas Jones states: I have been 14 years in the service, and a porter for eight years, at Sheerness-on-the-Sea for five months. On the 29th June I came on duty at 7 a.m. to work for 12 hours. I had the same duty on the previous day. I was working as porter and shunter. When the 11.30 a.m. train from Sittingbourne arrived at 11.55, I uncoupled the engine, having first turned the cocks on the brake-pipe. The engine then pushed the train out clear of the cross-over road, a distance of about 20 yards. The engine then ran round the train, and I went and coupled it on at the other end. As it was coming back on to the train I applied the brake upon the carriages by opening the cock, which I shut again at once. I hooked the engine on and screwed up the coupling. I then connected the brake-pipe, and to the best of my belief I turned the two cocks as usual. I never omitted to do this before, and I cannot think that I did so upon this occasion. I waved the train back from the platform, and the driver seemed to have no difficulty in pushing it back. He seemed to be coming rather fast. I was steadying him, and gave him a signal to stop, and he pulled up dead within a few feet, so that I had to call him back again to get on to a van which was against the buffer-stop. The train had to come back in all about five carriage lengths. To the best of my recollection, I heard the brakes released when the driver set back on to the van after being stopped. I had then nothing more to do with the train. I knew the carriage examiner was working at the van, but did not know anything about him coupling on to the train. I knew he wanted to do so, and that is why I brought the train back on to the van. I am quite positive that I applied the brake on the carriages at Sheerness-on-the-Sea just as the engine was running back. I just pulled the tap over and put it back again at once, letting just enough air out to apply the brake sufficiently to hold the train. Before the train started I pulled the string to release the brake on the rear carriage, by order of the inspector. There was a very slight escape of air.

John Flavin states: I have been 10 years and 11 months in the service, and for 10 months have been inspector at Sheerness-on-the-Sea. On the 29th June I was in charge of the platform when the 11.30 train from Sittingbourne arrived. I afterwards saw the train coming back to the platform, after the engine had run round, and had been coupled on at the other end. It was stopped short by my signal to the shunter, and it stopped very suddenly. It was then set back for about 6 feet more to get on to a van, and before it came back I heard the brake released in the usual manner under the vehicle. Before I came to Sheerness I was a shunter at Herne Hill. I am quite familiar with the working of the Westinghouse brake, and have no doubt that the brake-pipe was open throughout this train. When the time came for the train to start the driver could not get off, so I told the acting-guard to release the brake on two carriages, which he did. There was then no difficulty in starting the train. The engine was not uncoupled after it had set the train back to the best of my belief. I saw the carriage examiner testing the brake-pipe on the van by attaching it to the train.

Henry Wilby states: I have been 13 years in the service, and porter and foreman at Sheerness Dockyard all the time. On the 29th June I came on duty at 8 a.m. for 12 hours. I was on duty on the platform when the collision took place. I was just at the end of the station roof. I saw the train approaching, and when the engine was between the signal-box and the platform I thought it was coming rather fast. I saw that the engine wheels were skidding, but that the wheels on the carriages were running free. I think the engine passed me at a speed of five or six miles an hour, and at a little less when it struck the buffer-stops. I saw that the driver had his hand on the reversing lever, and the fireman was screwing up his brake. I thought that the front van and the next coach had jumped off the road from the rebound, and I went and looked, and then went to the engine. The station-master was there, and the fireman also. I said to them, "Why, the taps are not turned." I then uncoupled the engine, but there was no air in the pipes. Both taps were shut. I was the first person there, and there was no time for anyone to have tampered with the taps after the collision took place.

H. B. Stanford states: I am station-master at Sheerness Dockyard station. On the 29th June I

was in my office when the collision took place. I was called out at 12.49 p.m. I can corroborate foreman porter Wilby's statement about the cocks on the brake pipes behind the engine not being turned. I would like to mention that upon Friday, July 1st, guard Knowles called my attention at 4.55 p.m. to the fact that the Westinghouse pipe had been disconnected between the rear brake and a third-class coach of the 5 p.m. up train. Upon inquiry I found that this had been done by examiner Daniels for the purpose of cleaning the coupling. Daniels, who was then upon the foot-plate of the engine, acknowledged that he had forgotten it. The train had arrived at 3.55 p.m., and was not divided by my staff.

Arthur James Lyddon states: I am a carriage examiner. I have been nine or ten years in the service. In order to test the hose-pipe of a van I attached it to the rear hose-pipe on the train to which the accident happened on the 29th June. I connected the hose-pipes for a few seconds, and when I had finished testing I closed the tap at the rear of the train and uncoupled the pipes again. I never went near the front of the train. I saw the train coming back, but I cannot say whether or not the continuous-brake was used to stop the train. I did not hear the brake being released. I do not think the train was stopped at all until it came back on to the van.

Conclusion.

This collision with buffer-stops was due to the non-observance of the rules of the Company in regard to the working of the Westinghouse brake, with which brake the train in question was fitted.

Upon the arrival at Sheerness-on-the-Sea station, at about noon, of the 11.30 a.m. down train from Sittingbourne, the engine was uncoupled, the train was pushed out clear of the cross-over road, the engine was run round the train and was coupled on, and the train was pushed back to the platform, where it stood until 12.45, at which time it was due to start back to Sittingbourne. There was some difficulty in starting, and the driver, thinking that the brakes upon the carriages were on, told his fireman and some other servants of the Company to release them by opening the valves on the cylinders, after which there was no difficulty in starting. The train ran at about the usual speed to Sheerness Dockyard station, and it entered this station at a speed of from five to seven miles an hour with steam off and with the hand-brake on the guard's van, and that on the engine applied. There is very little doubt that the driver could have stopped his train at any time when running along the platform by the use of the continuous-brake, if this brake had been in working order; but, when he attempted to make use of it when about 35 yards from the buffer-stops, he found that it would not act, and the engine was still running at a speed of from three to five miles an hour when it struck the stops.

Immediately after the collision it was found that the cocks on the hose pipes between the engine and the leading carriage had been left shut, so that the brake when applied was inoperative except upon the engine wheels, which were already braked by means of the hand-brake.

The shunter who coupled on the engine at Sheerness-on-the-Sea is under the impression that, as usual, he had opened the cocks after coupling up the hose-pipes, and both he and an inspector who was on the platform state that the brake was used to stop the train when it was backed to the platform, and that they heard the brakes taken off again from the engine. If this evidence be correct, someone must have tampered with the brake connections before the train started, for it is quite certain that the cocks were shut when the train ran into the Dockyard station; but I have very little doubt that both the inspector and the shunter are mistaken, and that the latter omitted to open the cocks after coupling on the engine.

If so he is primarily responsible for the accident, but his omission would not have caused it had either the driver or the guard done their duty, for the former is, by the rules, enjoined to satisfy himself before starting that the cocks are open, while there is also a distinct order that the guard is to test the brake before leaving a terminus by applying it and seeing that it is released from the engine. Besides this it is quite clear that the rule that terminal stations are to be entered "at such a speed that the ordinary "application of the hand-brake on the engine or tender will be sufficient to bring the "train or engine to rest," was disregarded, for the brake in the guard's van, as well as that upon the engine, was in this case actually applied, and yet the train did not stop at the proper place.

Experience shows that, notwithstanding the rules, drivers of trains fitted with the continuous brake do rely upon this brake to pull up their trains in terminal stations, and either enter them at too high a rate of speed, or, as in this case, run too far before taking steps to stop; and if a strict obedience to the rule cannot be enforced, the only safe thing to do is to forbid the use of the continuous brake in terminal stations except when an emergency arises.

It might have been expected that when the brakes upon the train were found to be on before it started from Sheerness-on-the-Sea, having no doubt been applied by the

action of the carriage examiner who connected a brake-van to the rear of the train for the purpose of testing a new washer, the driver would have taken more care to see that the brake was properly connected up, and it was, in my opinion, careless of the fireman not to have done so when he got down to release the brake on the leading vehicle.

The four servants of the Company who were more or less responsible for this accident, viz., the driver, the fireman, the guard, and the shunter at Sheerness-on-the-Sea had respectively been on duty at the time for seven hours, seven hours, 4½ hours, and six hours.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

(Signed) F. A. Marindin,
Major, R.E.

APPENDIX.

London, Chatham, and Dover Railway.

Notice to Enginemen.

Continuous Brakes.

Clause from Westinghouse brake instructions:—

"In running into terminal stations with buffer-stops, and at junctions where he has to stop, and also when moving up to attach his engine to a train, the driver must not rely on the continuous-brake, but must so regulate the speed of the engine that the ordinary application of the hand-brake on the engine or tender will be sufficient to bring the train or engine to rest."

The attention of enginemen is specially called to the above, and they are hereby warned, *that junctions and terminal stations must not be approached, and entered at a greater speed than will enable the train to be stopped clear of the junctions or buffer-stops by the application of the hand-brake only.*

Any disregard of the above instructions after this notice, the driver in fault will be severely dealt with.

Locomotive Department,
Loughedge Works,
Wandsworth Road, S.W.
November 27th, 1891.

(Signed) William Kirtley.

Printed copies of the above Report were sent to the Company on the 16th August.

MIDLAND RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
12th July 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 16th ultimo, the result of my enquiry into the causes of the collision which occurred on the 14th ultimo at Leeds station on the Midland Railway.

In this case, the Bristol portion of the down Scotch express, due at Leeds at 2.7 a.m., was by mistake turned on to the south, instead of on to the north arrival line at Leeds station, and came into collision with an unattached engine standing on the south arrival line, causing one pair of wheels in two of the front vehicles of the express to leave the rails.

Four passengers have complained of injury; a goods guard travelling as a passenger in the front van, the driver and fireman of the unattached engine, and another driver and fireman who were travelling on its footplate from the engine-shed to the station, were also injured.

In the passenger train, which consisted of engine, tender, brake-van, luggage-van, composite carriage, brake-van, composite carriage, and third-class brake carriage, six vehicles in all coupled in the order given, fitted throughout with the automatic continuous brake, the engine and three front vehicles were damaged, and the trailing wheels of the second and third vehicles left the rails. The unattached engine, which was standing with the tender nearest the station, was a good deal damaged. It was knocked forward about 150 yards.

A list of damage to the rolling stock and permanent-way is given in an Appendix.

Description.

The admission of trains into Leeds station is regulated by two signalmen, one stationed in Leeds junction cabin about 55 yards east of the junction between the lines leading to the Midland and the Joint stations, and the other in Leeds station cabin about 315 yards east of the junction cabin. There are two main arrival lines, called north and south, the junction of which takes place about 70 yards east of the junction cabin, the points and signals for the arrival lines being worked by the junction signalman; the home-signals to which alone it is necessary to refer, are on two posts side by side about 13 yards west of the junction points, distant-signals worked from the station cabin being below each home signal.

Each arrival line gives access to three platform lines, the north arrival line to platform lines Nos. 4, 5, and 6, and the south arrival line to platform lines Nos. 1, 2 and 3, the admission signals being placed on two three-armed posts, those for the south arrival line being about 110 yards, and those for the north arrival line about 42 yards, west of the station-cabin, from which these signals and the points giving access to the respective platform lines are worked.

It should be observed that there is no means of running directly from the south arrival line to platform lines Nos. 4, 5, and 6, and there is consequently no signal for such an operation. The lines inside Leeds junction are practically level.

The two signal-cabins at Leeds are in telegraphic and telephonic communication; there are distinct block instruments both for the north and south arrival lines, and there are indicators in the junction cabin which work in connection with the distant-signals of the station cabin, and show whether these signals are off or on.

The collision took place on the south arrival line about 20 yards west of the station home-signals, which were at danger, or 130 yards east of the junction home-signals, of which that for the south arrival line was off, though the distant-signal below it was at danger.

Evidence.

1. *Jonathan Daniels*, driver.—I have been in the company's service 31 years, and a driver 23 years. I have been accustomed to run into Leeds station nearly all the time. On the 14th ultimo I came on duty at 1.25 a.m. to work the 2.25 a.m. train from Leeds to Derby, the 7.6 a.m. train from Derby to Trent, the 8.0 a.m. train from Trent to Sheffield, and the 10.57 a.m. train from Sheffield to Leeds due to arrive at Leeds at 12.0 noon. I should have signed off about 1 p.m. I left duty on the 13th ultimo at about 1.0 p.m., after having worked the same set of trains. On approaching Leeds junction with my light engine running tender first, the home-signal from Water Lane and the directing-signal for the south arrival line were lowered. The distant and home signals for the south arrival line worked from the station-box were at danger, and I brought my engine to a stand near to the home-signals. Some shunting operations were being performed on the south side of the station and my fireman took the opportunity of throwing some water on the coals. Just about this time after I had been standing five to six minutes I looked through the weather-board glass towards the Leeds junction, and saw the engine head-lights of the Scotch express approaching. I also noticed that the station home-signal applicable to No. 4 platform line was off and I concluded that the Scotch express was going in on the north arrival line on its way to No. 4 platform. Consequently I took no further notice of it. Shortly afterwards driver Cullingworth, who was on the engine with me, said "He is into us," and directly afterwards the collision took place, causing the coal on the tender to be very much displaced and covering fireman Hardisty. The gauge-glass was broken, and steam consequently escaping. My engine was driven forward about 150 yards. I received some cuts on my head and am still off duty in consequence. I with some assistance succeeded in releasing fireman Hardisty, and he was taken to the infirmary as soon as possible. Driver Cullingworth received bruises. My fireman received a slight cut on the head, but was incapacitated from duty for one day only. None of the wheels of my engine left the rails, but the engine was much damaged. Driver Cullingworth and fireman Hardisty travelled on my engine from the engine-shed to the passenger station for the purpose of going to Bradford with the 2.26 a.m. train to relieve a driver and fireman who would have made long hours if they had not been relieved. The brake on my engine and tender were not applied when the collision took place, and I had no warning, consequently I did not apply steam to reduce the shock or endeavour to avoid the collision. I cannot state the speed of the Scotch express, the engine of which had not whistled. I had whistled once on coming to a stand about three minutes before the collision.

2. *Charles Herbert Cobb*, fireman.—I have been in the Company's service about eight years, and a fireman about five years. I corroborate the statement made by driver Daniels, my hours having been the same as his. I was just in the act of walking along the coals on the tender with a bucket of water in my hand when the collision took place. Without any warning the coal shot from under my feet and I was thrown on my back. I received a slight cut on the back of my head, but resumed duty the following day.

3. *Benjamin Cullingworth*, driver.—I have been in the Company's service 12 years, and a driver five years. On June 14th I came on duty at about 2.0 a.m. to sign off at 12 noon. I and my fireman were going to Bradford by the 2.26 a.m. train, as passengers, and we rode from the engine-shed to the Wellington station on Daniel's engine. The engine was brought to a stand at the south arrival home-signals. I was leaning over the hand-rail on the south side of the engine when I saw the engine head-lights of the Scotch express approaching. I expected the train was going down the north arrival line, but as the lights continued in my view from the south side of the engine, I was satisfied that the train was coming in on the line we were upon. I called to driver Daniels, but there was not time to do

anything, and immediately the collision took place. The coal on the tender was thrown on to the foot-plate, and my hands were cut and my shoulder bruised. I am still on the sick list. There was no time to move the engine after I saw the train. The brakes were off the engine I was on. The speed of the Scotch express was 10 to 12 miles an hour. The morning was fine but dark.

4. *George Larrad*, driver.—I have been in the Company's service 29 years, and a driver 23 years. I have been accustomed to run to Leeds for several years, but not constantly for more than about six weeks. I came on duty at Leicester at 10.34 p.m. on the 13th June to work the 11.34 p.m. express Leicester to Leeds, due to arrive at Leeds at 2.7 a.m., and then to work the 3.15 a.m. train from Leeds to Leicester, due at Leicester at 5.37. I should have signed off about 10.20 a.m. I had been off duty from 10.20 a.m. on the 11th. On arriving at Trent I was instructed to work the first portion of the Scotch express to Leeds. I left Trent with engine, tender, and seven vehicles, all fitted with the continuous brake, capable of being applied from the foot-plate of the engine. At Normanton I detached one vehicle, and from Normanton to Leeds the train consisted of engine, tender, and six vehicles. I left Normanton about 10 minutes late. All the signals were off from Normanton to Leeds junction for me to proceed when I first sighted them. On passing Water Lane junction I noticed that all the signals at Leeds junction were off, and the directing-signal was lowered for me to go in on the south arrival line, but the lower arm of that post, which is the distant-signal worked from the station box, was at danger, and both the directing-signal and the distant-signal for the north arrival line were also at danger. The three signals on the home-signal post for the south arrival line worked from the station box were all at danger, but the station home-signal applicable to No. 4 line was off. I had shut off steam about three-quarters of a mile from Water Lane junction and never re-applied it. After passing Water Lane I slightly applied the continuous-brake, so as to comply with the regulation as regards speed when passing over Leeds junction, and I passed over that junction at about 10 miles an hour. I found the directing-signal applicable to the south arrival line still lowered, and my train proceeded on that line. Both distant-signals worked from the station signal-box were at danger, but the home-signal applicable to trains entering the station on No. 4 platform line was lowered, and I arrived at the conclusion that it was lowered for me to enter No. 4 platform from the south arrival line. Directly afterwards I noticed an engine standing just in front of me, my speed being 10 miles an hour, and I at once applied the continuous-brake, but my engine was too near the engine standing upon the line to be able to stop before coming into collision with it. I estimate the speed of my train at the time of the collision at possibly something less than 10 miles an hour. I did not catch sight of the red light on the engine so soon as I might have done, as I believed there was a connection between the south arrival line and No. 4 platform line, and I kept my eye on No. 4 platform line home-signal until it was too late for me to stop before reaching the light engine.

5. *James William Gee*, fireman.—I have been in the Company's service seven years, and a fireman three years. On June 13th I came on duty at Leicester to act as fireman for driver Larrad, with whom I had been on duty about a fortnight. My hours were the same as his. This was my fifth journey to Leeds. I am not at all well acquainted with the signals or the arrangement of the lines at Leeds. Larrad said nothing after passing Leeds junction as to where he thought we were going. Our speed at the junction was about 10 miles an hour. I saw the red light on the engine 30 or 40 yards off. My mate said, "Hold on," and I got my tender brake on a little harder (it was partly on) before we struck. I was thrown away from the brake handle, but have not had to go on the sick list. The driver was slightly hurt, but had not to go on the sick list. The same morning, after the collision, the driver told me he thought he should have been turned from the south on to the north arrival line. The night was fine.

6. *Charles Watts*, passenger guard.—I have been in the Company's service 12 years, and a passenger guard nine years. I have been accustomed to run into Leeds all the time. On June 13th I came on duty at 4.30 p.m. to sign off at 4 a.m. after having been off duty since 7 p.m. on the 11th. I came on duty at Bradford at 4.30 p.m. to work the 5 p.m. passenger train, Bradford to Leeds, then the 6.15 p.m. train from Leeds to Derby, the 11.35 p.m. train from Derby to Trent, and the 12.10 a.m. train from Trent to Leeds (this forming part of the 9.15 p.m., St. Pancras to Glasgow). The foreman at Trent told me that the Bristol portion of the Scotch express would be run separately from the London portion from Trent to Leeds, and that I was to be the guard of the train. We left Trent at 12.15 a.m., five minutes late, having been delayed by the St. Pancras to Edinburgh train. On leaving Trent my train consisted of engine No. 1492, tender, and seven ordinary vehicles, in the following order:—Engine, tender, leading-van, van containing hampers of fruit, composite carriage, sleeping saloon carriage for the North-Eastern railway, guard's van, composite carriage, and third class brake carriage. I travelled in the third class brake carriage from Trent to Sheffield, and in the van, the third vehicle from the rear, from Sheffield to Leeds. The engine and tender were fitted with a steam-brake, and the train throughout with the automatic-vacuum brake, capable of being applied throughout from the engine and from either of the guard's vans. The brake was in good working order, and the train was brought to a stand at Sheffield and Normanton by the use of it. The sleeping saloon carriage was detached at Normanton, and the train left Normanton at 2.2 a.m., 10 minutes late, having been delayed by slackening for relaying near Oakenshaw, and by detaching the saloon at Normanton. Nothing unusual occurred after leaving Normanton. until the train was entering Leeds station. On approaching Leeds junction, I noticed that the home-signal was lowered. I did not notice the Leeds junction directing-signal, but I saw the home-signal at the Leeds station box off for No. 4 platform line. Not being aware at the time we were on the south arrival line, I concluded that my train was going to enter that platform line, and was preparing to apply the hand-brake when the collision took place, and I was knocked down in my van. I left my van as soon as possible and noticed some wheels of the vehicles of my train had left the rails, but I cannot say how many, and after ascertaining that my train was properly protected by signals, I assisted some passengers to alight. Two gentlemen complained of cuts and bruises. Goods guard Dent was in the front van, returning from Normanton to Leeds. I assisted him out and found that he was much shaken and appeared to be somewhat dazed. I did not see the men who were on the engines. I believed we passed over the Leeds junction at the usual speed of about 10 miles an hour, and I did not notice any difference in the speed entering the station than is usual when the station signals are lowered for us to do so. When in the neighbourhood of Hunslet I noticed that the vacuum-gauge showed 20 inches. On approaching Leeds junction the brake was slightly applied, and the vacuum was reduced five or ten inches. I am satisfied that the brake was not thoroughly released before the collision took place, but I think it was not fully applied before the collision. The night was fine. The time of the collision was 2.17 a.m.

7. *William Mangles*, signalman.—I have been in the Company's service 21 years, and a signalman all the time. I have been employed at Leeds station box 15 years and came on duty there on June 13th at 10 p.m. to remain until 6 a.m. on the 14th. I am alone in the cabin and do not book the trains. I left duty on Sunday, the 12th, at 5 p.m., after having been on duty 10 hours. At about 1.30 a.m. on the 14th, station inspector Phillips informed me that the 9.15 p.m. express from London to Glasgow was running in two portions, that the first portion was a short train, and the second portion a long one, and after this he told me that I must turn the first portion into No. 4 platform line, reserving No. 1 platform line, on which the train is usually dealt with, for the second portion. Shortly after this I told the signalman at Leeds junction that the 9.15 p.m. train from London was running in two portions, but I did not tell him on to which lines it had been arranged that the trains should be turned. The 1.45 a.m. train from Bradford to Leeds, which forms the 2.25 a.m. train from Leeds to Derby, arrived at No. 2 platform punctually at 2.5 a.m. The shunter had previously told me that some carriages which were standing on the siding between Nos. 2 and 3 platform lines, and to which the pilot engine was attached, would have to be placed at the rear of the Bradford train, to form the front portion of the train from Leeds to Derby, and that it would be necessary for me to keep the engine of the 2.25 train from Leeds to Derby on the south arrival line until the carriages had been placed at the rear of the Bradford train. As soon as the Bradford train had entered the station, the signalman at the Leeds junction signalled to me a light engine, and I was satisfied that this was the engine for the 2.25 a.m. train from Leeds to Derby. I gave permission on the needle instrument for the engine to approach my post on the south arrival line. It did so, and was brought to a stand at my home-signals. About this time I unpegged the needle of the south arrival line, and allowed it to become vertical or line blocked. Shortly afterwards the signalman at the Leeds junction signalled to me by bell a passenger train approaching from Hunslet, and soon after the signalman at Hunslet south junction informed me by special bell that the Scotch express train was passing. I then pegged the needle applicable to the north arrival line to "Line clear" and took off my home and distant signals to allow the train to enter the station on the north arrival line and run to No. 4 platform. After the arrival of the Bradford train the pilot engine placed the carriages on No. 2 platform line at the rear of it and an engine that was on No. 3 line attached to some fish trucks, required to run from No. 3 platform line to the north departure line. I was attending to these operations, and the engine with the fish trucks attached had just run clear on to the north departure line, when I heard the collision take place, causing the engine of the Derby train to run past my box and through the points leading from No. 3 platform line to the north departure line, damaging them. Practically at the same time I knew that the Scotch express had been turned on to the south arrival line instead of being turned on to the north arrival line. I saw the head lamps of the engine of the Scotch express as the train was approaching Leeds junction. At this time I supposed that the train was being turned on to the north arrival line at the Leeds junction, and that the Leeds junction directing-signal and my distant-signal were lowered for that line, but it occurred to me that the train was coming in rather smartly though not more so than usually. I did not notice the back light of my distant-signal, which is controlled by the lever working the Leeds junction directing-signal.

8. *Henry Evans*, signalman.—I have been in the Company's service 21 years, and a signalman 20 years. I have been employed at Leeds junction 10 years, and came on duty there on the 13th ultimo at 10 p.m., to remain until 6 the next morning. I left duty on Sunday the 12th at 5 p.m., after having been on duty 10 hours. I was alone in the cabin. I book only delays to trains. At about 1 a.m. on the 14th ultimo signalman Mangles at Leeds station signal-box told me by telephone that the 9.15 p.m. express from London to Glasgow was running in two portions, but he did not say on which platform lines it was arranged that the trains should be dealt with. The 1.45 a.m. passenger train from Bradford to Leeds, due at Leeds at 2.5 a.m., passed my post punctually, and I turned it on to the south arrival line. Shortly afterwards the engine to work the 2.25 a.m. passenger train from Leeds to Derby was signalled to my post from Water Lane junction, and I signalled it forward to the Leeds station. I sent the signal for this engine to run on the south arrival line, my south arrival needle instrument being pegged to "Line clear." In about the usual time after this engine had passed my post this needle was unpegged and became vertical. Shortly afterwards I received the "Is line clear?" from Water Lane junction for the first portion of the Scotch express, and I signalled this train to the Leeds station box in the usual way. Some little time afterwards, the signalman at the Leeds station box pegged the north arrival needle instrument to "Line clear," and the disc-signal fixed in my box which is worked with the same wire that takes off the slot of the Leeds station distant-signal applicable to the north arrival line, was taken off about two minutes afterwards, but unfortunately I arrived at the conclusion that it was the south arrival needle that was pegged to "Line clear," and the south arrival disc that was taken off, and I took off the whole of my signals for the south arrival line. I cannot account for my making the mistake. Just as the engine of the Scotch express was passing my box I noticed the north arrival directing-signal at danger, and the south arrival signal lowered. I saw both distant-signals worked from the station box at danger, and as one of the disc-signals had been turned off, I knew that the distant-signal should be lowered. I then at once saw that I had made a mistake, but not in sufficient time to enable me to place the directing-signal to danger and reverse the points, as the engine was passing the box when I saw the mistake I had made, but I at once put the directing-signal to danger. Shortly afterwards the collision took place. I think the speed of the train would be about 20 miles an hour when passing my box, that being the *usual* speed when the station signals are off. When the Derby engine passed me it had a red light at the chimney end, but I did not notice this light when the engine was standing at the station home-signals. I think the whole of my signals were lowered fully two minutes before the train passed my post, and during the whole of that time the station distant-signals were at danger. I cannot account for not noticing when I lowered my directing-signal that the distant-signal worked from the station signal-box did not come off, as it certainly should have done, as the disc-signal fixed in my box worked by the same wire was taken off. I have never previously known a case where the whole of the signals worked from the Leeds junction have been lowered for a train to enter the station, when the distant-signal worked from the station box applicable to the line on which the train was being turned, was at danger. In my cabin there are 29 working levers and 11 spare ones, four block instruments, five bells, two indicating instruments, and one telephone.

Conclusion.

This collision between the Bristol portion of the down Scotch express and an unattached engine was primarily caused by a mistake made by signalman Evans, on

duty in Leeds junction cabin. Instead of lowering the directing-signal for the north arrival line, for which line the block instrument worked from Leeds station cabin showed "Line clear" and for which line the station signalman had pulled over the lever of the distant-signal, thereby actuating a disc in the junction cabin, Evans by some mistake, the cause of which he cannot explain, took off his signals for the south arrival line, for which line the block instrument had been showing "Line blocked" since the unattached engine, with which the train came into collision, had run into the station a few minutes previously, and for which line the distant-signal and its indicating disc worked from the station-cabin were at danger. It was not till the engine of the Scotch express was passing his cabin that Evans, noticing one of the disc-signals turned off and neither of the station distant-signals lowered, realised his mistake, and it was then too late for him to throw up the south arrival line home-signal to danger and reverse the facing-points before the engine reached them. It was usually the custom for this train to enter the station on the south arrival line, and I presume it must have been force of habit which led Evans to lower the signals for that line on this occasion, overlooking or not realising the fact that the block-signal and disc-signal for the north arrival line had been taken off by the station signalman.

Evans is an experienced signalman of 20 years' service in that capacity, and had been employed for 10 years in the Leeds junction-cabin, where he had come on duty at 10 p.m. on the 13th June for a spell of eight hours, about 4½ hours before the collision. He had left duty on the 12th June at 5 p.m.

He is a man of good character and has received a gratuity for good conduct.

Mangles, the signalman in the Leeds station-cabin, made no mistake either with regard to the unattached engine or to the train which came into collision with it. He was obliged to keep the engine standing at the home-signals on the south arrival line for some few minutes after its arrival, as shunting operations were going on in connection with the train from Leeds to Derby, to which it was to be attached and which was standing on No. 2 platform line. After the arrival of the engine, Mangles unpegged the needle of the south arrival line, and on Evans shortly afterwards signalling on to him the Scotch express, he pegged the needle for the north arrival line to "Line clear" and took off the home-signal for No. 4 platform line and the distant-signal, which latter actuates a disc in the junction-cabin, but he did not notice the back light of the distant-signal. He was then attending to the shunting in connection with the Leeds and Derby train when he heard the noise of the collision, saw the unattached engine run past his cabin and then realised that the Scotch express must have been turned by mistake on to the south arrival line.

No blame is to be attached to Mangles, though it is to be regretted that when informing Evans that the Scotch express was being run in two portions, he had not at the same time told him that the first portion was to be turned on to the north arrival line as had been arranged between Mangles and the station inspector, it being more customary for the train to enter the station on the south arrival line. Had this information been given to Evans, it might have prevented him making the mistake he afterwards committed.

Mangles is a signalman of 21 years' service in that capacity. He had been employed 15 years in the Leeds station-cabin where he had come on duty at 10 p.m. for eight hours, about 4½ hours before the collision, having left duty on the previous day at 5 p.m.

Larrad, the driver of the Bristol portion of the down Scotch express, which he had joined at Trent junction, on approaching Leeds junction about 10 minutes late, found the junction signals clear and the signal lowered for the south arrival line, the lower arm on the same post, which is the distant-signal from the station cabin, being at danger. He noticed also that the three home-signals on the south arrival line, for Nos. 1, 2, and 3 platform lines, were all at danger, but that the signal applicable to No. 4 platform line was off. He had shut off steam nearly a mile back and never reapplied it, and estimates the speed on passing Leeds junction, when he had checked his train with the brake, at about 10 miles an hour. On seeing this condition of the signals Larrad formed the erroneous conclusion that it must be possible for him to reach No. 4 platform line from the south arrival line and he was proceeding forward still at a speed of about 10 miles an hour under that assumption, when he suddenly noticed an engine standing on the line in front of him, the red light on which he would have seen sooner, but that he was keeping his eye on the signal for No. 4 platform line, which signal he still thought was applying to his train when running on on the south arrival line. On seeing the engine he at once applied the continuous brake, but the distance was too short to enable it to take much effect and the collision was a violent one, causing Larrad's engine and tender to separate from its train and

run forward about 70 yards, the train itself stopping in about 22 yards and the unattached engine being sent flying past the station signal-cabin and stopping about 150 yards from the point of collision.

Although Larrad appears to have had a fair acquaintance with Leeds station, his knowledge of it cannot have been very accurate or he would have known that it was impossible for him to run into No. 4 platform line from the south arrival line. It was of course misleading for him to find the signals as they were showing, though it might well have occurred to him that as the station distant-signals were at danger, the signal for No. 4 platform line was off for some operation not connected with his train.

Larrad no doubt considerably under-estimated the speed of his train when he caught sight of the engine standing in his way. This speed, judging by the results, must have considerably exceeded 10 miles an hour, the speed limited for running between Leeds junction and the station, and he is to be blamed accordingly.

Larrad's fireman Gee had been only five times into Leeds station, and was not at all well acquainted with the signals. He saw the red light on the unattached engine when about 30 or 40 yards off. His tender hand-brake was partly on at the time, and he got it on a little harder before the collision. His estimate of the speed is much the same as Larrad's.

Larrad and Gee had come on duty at 10.34 p.m. on the 13th June, (having left duty at 10.20 a.m. on the 11th) for about $11\frac{3}{4}$ hours. They had thus been on duty about four hours when the collision occurred. Larrad has been a driver 23 years, and Gee a fireman three years.

Watts, the guard of the train, was well acquainted with Leeds station. From Sheffield he was travelling in the guard's van, the third vehicle from the rear of the train, which was running 10 minutes late, it having been five minutes late leaving Trent, and having lost five minutes in detaching a saloon at Normanton and slacking for permanent-way alterations at Oakenshaw. On approaching Leeds junction Watts did not notice which signal was lowered for the arrival lines, but saw that the signal for No. 4 platform line was off, and concluded his train was going to run into that line, when the collision occurred just as he was going to apply his hand-brake. He estimates that the speed was about as usual, not exceeding about 10 miles an hour. Had Watts, as he ought to have done, taken care to see which arrival line signal was lowered, he might have realised the mistake which had been made, and have stopped his train with the continuous brake in time to have prevented the collision. Guards, unfortunately, frequently neglect to realise their responsibility as to keeping a look out for signals, otherwise they might often rectify the effects of a driver's oversight, and by the application of their continuous brakes do good service in averting collisions.

Watts has been a guard for nine years; he had come on duty at 4 p.m. on the 13th June for $11\frac{1}{2}$ hours, and had thus been on duty $10\frac{1}{4}$ hours at the time of the collision.

No blame is to be attached to the men in charge of the engine and tender which were run into. They were waiting at the home signals on the south arrival line until they could join the train for Derby which they were to work. They had seen the Scotch express approaching, but, from the signal being lowered for No. 4 platform line, concluded that it was running in on the north arrival line till just before the collision, which occurred before there was any time to put the engine in motion. The brakes on the engine and tender were off when the collision took place and the engine and tender were, as before stated, knocked forward about 150 yards.

To prevent the recurrence of the mistake which led to this collision, it is deserving of serious consideration whether it would not be expedient to give the signalman in the station-cabin electrical or mechanical control of the home-signals for the north and south arrival lines.

I have, &c.,

C. S. Hutchinson,
Major-General, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Particulars of the Damage to the Engines, Vehicles, and Permanent-way caused by the Collision at Leeds on the 14th June 1892.

Unattached Engine No. 1512.

Two outside frames broken and bent; two inside frames bent; cylinders damaged in front and loose; drag beam loose; angle iron broken between frames; all foot-plating bent; all splashers shaken loose; angle-irons damaged; weather-cab loose two buffers

and plank totally to renew; all rivets in engine frames generally shaken loose; front fall-plate to repair; inside leading springs and pins broken, &c.

Train Engine No. 1492.

Left-hand outside frame broken and bent; right-hand outside and both inside frames bent; box angle-irons between frames broken and bent; cylinders loose; drag beam bolts 1⅛ in. sheared off; trailing buffer-beam bent; all foot-plating bent and loose; all splashers and cab-rivets loose; angle-irons broken; front buffer plank-plates and buffers to renew; all rivets in engine frames generally loose, &c,

Damage to Vehicles.

Glasgow and South-Western van No. 111.—One foot-board, two end-panels, one buffer-casting broken; corner of body damaged, and two buffer-rods bent.

Glasgow and South-Western composite No. 20.—One screw coupling shackle bent.

Midland passenger van No. 27.—Off the rails one pair of wheels; one headstock damaged, and two buffer-rods bent and body moved.

Midland passenger van No. 64.—Off the rails one pair of wheels; one headstock and door light broken; body moved, and gland-casting for automatic vacuum-brake cylinder broken.

Midland composite No. 265.—Off the rails one pair of wheels; one headstock, three buffer-castings, one buffer-rod, three end-panels, one side-panel, and four quarter-lights broken, and three buffer-rods bent.

Damage to Permanent Way.

Two rails bent; the switches of the facing-points damaged, and the road forced out of line six inches; four chairs broken; two switch-pins and cotters broken; front switch-bar of No. 9 facing-points worked from station-box badly bent.

Printed copies of the above Report were sent to the Company on the 8th August.

MIDLAND RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
6th July 1892.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 10th ultimo, the result of my enquiry into the causes of the collision which occurred on the 9th ultimo at Esholt junction (where the lines from Leeds and Bradford to Ilkley unite) on the Midland Railway.

In this case, the 3.10 p.m. passenger train from Ilkley for Bradford, due to pass Esholt junction about 3.32 p.m., was run into, while crossing the junction, by the 3.7 p.m. passenger train from Leeds for Ilkley due to pass the junction about 3.21 p.m.

The collision was attended by disastrous consequences as regards the passengers in the train from Ilkley, one of whom was killed on the spot, another died while being removed to Leeds, and three others died in Leeds Infirmary, one on the day of the collision and two on the following day.

Twenty-six passengers were more or less seriously injured. In the train from Ilkley, one of the guards, and in the train from Leeds, the driver, fireman, and guard, all received serious injuries.

The train from Ilkley consisted (after leaving Guiseley, where it had been divided) of an eight-wheeled (four wheels coupled in front) tank-engine running chimney in front, and eight vehicles counting as 8½, viz., third-class brake-carriage, third-class, two first-class, two third-class, third-class brake-carriage, and eight-wheeled bogie brake-carriage, coupled in the order stated. The train was fitted throughout with an automatic brake, that for the engine being applied by steam and for the vehicles by vacuum. In this train the last six vehicles were damaged, the fifth, sixth, and seventh badly, the sixth being turned over on its right side and completely broken up. The train was separated between the fourth and fifth vehicles.

The train from Leeds consisted of an engine and tender, running engine in front, and six vehicles, viz., a third-class brake-carriage, third-class, first-class, composite, third-class and third-class brake-carriage, coupled in the order stated. The train was fitted throughout with an automatic brake, that for the engine and tender being applied by steam, and for the vehicles by vacuum.

In this train the engine and tender, which were turned over on their right sides, were seriously damaged, and the first vehicle was also damaged. The couplings gave way between the first and second vehicles.

A detailed list of damage sustained both by the rolling stock and permanent-way is given in an Appendix.

In consequence of the injuries received by some of the witnesses, I was unable to conclude my enquiry until some time after I had commenced it on June 13th.

Description.

At Esholt junction the line between Leeds and Ilkley is joined by the line between this junction and Bradford. The approach to the junction from Leeds is up a steep gradient of 1 in 60, which commences rather more than two miles on the Leeds side of the junction and continues on the Ilkley side of it. A short tunnel about 60 yards long terminates 254 yards from the junction home-signals of the lines from Leeds and Bradford; these signals (which are on separate posts in the fork between the two lines) both come into the view of a driver of a train from Leeds about the centre of the tunnel, *i.e.*, about 280 yards from them, an intervening bush on the right side of the line, which is here curved and in cutting, then obscures the view of the signal from Leeds for 40 or 50 yards, after which both signals are again uninterruptedly visible. The distant-signal from Leeds is on the Leeds side of the tunnel about 710 yards from the home-signal. Owing to the curve and cutting the line on the Ilkley side of the junction is not well seen by a driver from Leeds after emerging from the tunnel.

The junction home-signals for trains proceeding from Ilkley towards Leeds and Bradford are on separate posts about 150 yards from the facing-points, the distant-signals being about 440 yards from the home-signals. The junction-cabin is on the east side of the line, its centre being about 13 yards south of the facing-points. It contains 11 working levers, (properly interlocked), six block telegraph instruments, and three bells, the next adjacent signal-cabins being Apperley junction, towards Leeds 2 miles 18 chains distant, Baildon towards Bradford 2 miles 28 chains distant, and Rawdon junction towards Ilkley 25 chains distant.

So far as regards trains following each other absolute block working is in force in each direction, but as regards trains converging towards or crossing each other at the junction, the rule known as Clause 16 of the Block Telegraph Regulations, which is in force at most of the junctions on the Midland line, is acted on. The rule is as follows:—

"16. *Section Clear and Station or Junction Blocked.*—When the line is clear to the home-signal, and it is necessary for a train to be allowed to approach a post cautiously, in consequence of an obstruction existing ahead of the home-signal, or from any other cause, the 'Is line clear?' signals must not be acknowledged in accordance with clause 3, but the signal, 'Section clear and station or junction blocked' (13 beats on the bell), must be given, and when this signal has been acknowledged, the proper 'Train entering section' dial signal must be given and acknowledged, and the needle must be pegged to 'Train on line.' The signalman receiving such signal must, if the train has not already passed his box towards the starting or advanced starting-signal, stop the train, and instruct the driver to proceed cautiously to the post from which the signal was received. In case the train has passed the box and been brought to a stand at the starting or advanced starting-signal, the driver must understand that the lowering of the starting or advanced starting-signal is an indication that the line is only clear to the home-signal at the post in advance, and that he must regulate the speed of his train in the same way as if he had been instructed to proceed under the 'Section clear and station or junction blocked' signal. When some time is likely to elapse before the train for which the 'Is line clear?' signals have been sent, will be ready to enter the section, the 'Section clear and station or junction blocked' signal must not be acknowledged, but when the train is ready to enter the section, and before it is allowed to do so, the 'Is line clear?' signals must be again sent so as to give the signalman at the post in advance an opportunity of receiving the train under clause 3, if the circumstances are so altered as to admit of his doing so."

Two prominent features of this rule are that the train should be stopped and the driver instructed to proceed cautiously.

Evidence.

1. *Harry I'Anson*, signalman; 10 years' service, 1¾ years' signalman.—I have been employed at Esholt junction cabin about 11 months, where I came on duty on the 9th June at 5 a.m., to remain till 4 p.m., having left duty at 4 p.m. on the 8th. I was alone in the cabin when the collision occurred. I work block towards Baildon, Rawdon, and Apperley junction, but—except in the case of trains coming from Ilkley if the cross-over road is in use my rules permit me in clear weather to accept trains approaching the junction under clause 16 of the block rules, viz., with 13 beats on the bell, meaning "Section clear, but junction blocked." Just before the time of the collision, the interlocking and block-signal arrangements were in proper working order, the cabin containing 11 working levers, six block instruments, and three bells. The last change made in the cabin was about six weeks since, when a second distant-signal from the Ilkley direction was brought into use, there having been only one previously, and from that time

till after the collision, I am quite sure nothing had been done to interfere with the interlocking. At 8.24 p.m., I received "Is line clear" (4 beats) from Rawdon junction for the 3.10 p.m. train from Ilkley to Bradford, due to pass my junction about 3.30 p.m. if running to time. I accepted the train, being then clear to Apperley junction, and it was given "On line" at 3.29 p.m. At 3.25 p.m., I received the "Is line clear" signal at the same time from Baildon for the North-Eastern 3.15 p.m. train from Bradford for Harrogate, and from Apperley junction for the 3.7 p.m. passenger train from Leeds for Ilkley. I at once accepted the 3.7 p.m. Leeds train under clause 16, but I refused the North-Eastern train till 3.27 p.m., waiting two minutes for it to be offered a second time, as it takes some six minutes after its first being offered till its arrival. I accepted it at 3.27 p.m. under clause 16. In neither case of the two trains accepted under clause 16 is any further block-signal given from the block post in rear. After 3.27 p.m. I kept all my signals at danger until the North-Eastern train came in sight on emerging from the tunnel about 400 yards off, when I lowered my home-signal No. 7 for it, but not the distant-signal, as the train had already passed it. Directly after this, and when the North-Eastern train was between the tunnel and the cabin, I pulled over No. 10 facing-points and lowered Nos. 13 and 14 home and distant signals from Ilkley for the Ilkley train, about the position of which I was not then aware. I had never any intention of reversing these signals to allow the Leeds train to precede the Ilkley train. The North-Eastern train passed the junction at about 3.33 p.m., not going very fast, as my home-signal had been against the driver. The day being hot, I could not see the condition of the engine as regards steam. The Ilkley train next came in sight about the over-bridge near the home-signals, under which bridge the engines of it and the North-Eastern train passed each other, the engine and one carriage of the Ilkley train had passed the cabin when I first caught sight of the Leeds train about 80 yards outside the home-signal. I had not heard anything of the approach of the Leeds train before I saw it. I think I had put back No. 7 home-signal to danger as the rear brake of the North-Eastern train (consisting of about six vehicles) passed the cabin. I believe the signal must have been put back before the Leeds train came out of the tunnel. I saw that No. 7 signal went to danger when I put back the lever, and I noticed at the same time No. 8, the home-signal from Leeds, standing at danger. The engine of the Ilkley train passed the cabin about 3.33½ p.m. at a moderate speed. It was when the engine of the Leeds train was close to the home-signal and when the engine of the Ilkley train was just clear of the crossing, that I saw the Leeds train would overrun the junction. There was nothing in my power that I could do, as I thought if I showed the red flag, it might possibly cause the driver of the Ilkley train to slack his speed, whereas if he went on, I hoped his train might clear the junction. I heard nothing whatever from the direction of the Leeds train to indicate that the driver was aware of his danger; on seeing that a collision must occur I turned my head away, and on looking again towards the trains I saw the Leeds engine right over on its right side opposite the crossing, also the tender, but the rest of the vehicles on their wheels. I believe the Leeds engine struck the third vehicle from the rear of the Ilkley train. I do not know whether the driver of the Ilkley train put on more speed when he saw the collision imminent. No damage was done to the interlocking arrangements by the collision; some of the signal wires were injured, but not so as to pull any signals off. I put back the home and distant signals from Ilkley just when the Leeds train came in sight. I think I must have been giving the Ilkley train on to Baildon (which had accepted it at 3.29 p.m.) when it passed the home-signal, and this prevented my at once putting back the distant-signal. I had sent the "Train entering section" signal for the North-Eastern train to Rawdon junction at 3.33 p.m., and gave the "out" signal for this train to Baildon just before the collision.

2. *Thomas Aubrey*, signalman; 14 years' service, 11½ years signalman.—I have been employed 3½ years at Apperley junction, where I came on duty on the 9th June at 2 p.m. for eight hours. At 3.24 p.m. I gave the "Is line clear" signal to Esholt junction for the 3.7 p.m. Leeds train due to pass at about 3.20 p.m. I got the "train entering section" signal from Calverley for this train at 3.24 p.m. Esholt junction refused to accept the train in the usual way, but at once accepted it under clause 16. The train reached my cabin at 3.27 p.m. I kept my home-signal against it until it nearly reached it, and then lowered it, and put out a green flag; the engine passed the cabin at a speed of about 10 miles an hour, and I looked out of the cabin with a green flag in my hand, and I was on the point of calling out "Junction blocked," when the driver nodded, and I understood him to say "Right," and he held up his hand and nodded. I had lowered my starting-signal, when the driver whistled in acknowledgment of the green flag, on passing the home-signal. The train then proceeded on its journey. The driver was standing on the 6-ft. side of the foot-plate, and nodded from where he was standing. His fireman was turning round towards the tender when he passed; he was next the cabin. I did not see the guard. I heard nothing more of the train till about 3.40 p.m., when I got a telephone message to stop all traffic, which I ascertained was in consequence of an accident. I was alone in the cabin when the train passed. I have no authority to depart from the instruction in clause 16 to stop trains before allowing them to proceed with the signal "Section clear, but junction blocked," but in consequence of the rising gradient of 1 in 60 which commences about 200 yards on the Esholt side of the cabin, it is customary not to stop, but only to slow, the trains, before giving them the signal, and it is not usual to give a word-of-mouth-signal if the driver shows that he understands the meaning of the green flag. I have been asked on the telephone, by the signalman at Calverley, not to stop drivers dead before allowing them to proceed under clause 16. I think the engine of the Leeds train was about 400 yards outside the home-signal when I lowered it and showed the green flag. The main line trains are, as a rule, stopped dead before clause 16 is given, as the gradient is not steep on the main line.

3. *Charles W. Orford*, driver; 16 years' service, five years driver.—I have been accustomed to drive passenger and goods trains on the Ilkley branch for the past three years. I commenced work on the 9th of June at 11.20 a.m. for about a 10 hours' spell. I was driver of the 3.10 p.m. train from Ilkley for Bradford, and it consisted of an eight-wheel bogie tank-engine, No. 1,642, running chimney first and bogie behind, and from Guiseley the train consisted of eight (equal to 8½) vehicles, it being fitted throughout with the automatic vacuum brake except the engine, which is fitted with a steam brake, both brakes being actuated by one handle, and the automatic action applying to the engine as well as to the vehicles. We were running to right time, and had last stopped at Guiseley station, when the train had been divided. On leaving Guiseley the starting-signal was off, but the two distant-signals for Rawdon junction were at danger; on coming in sight of Rawdon junction home-signal I found it off, and the distant-signal for Esholt junction (the right hand one) was taken off as I was passing the home-signal. I also found the Rawdon junction starting-signal off, and then the right-hand home-signal at Esholt junction was also off when I sighted it (about 200 yards off). I passed the engine of the North-Eastern train close by the bridge, near the home-signals, when I had just shut off steam to run over the junction, my speed being about 20 miles an hour. I had just passed the signalman's box, with

steam still off, when I heard the beat of an engine approaching on the line from Leeds, and looking through the left-hand weather glass I saw the engine coming past the home-signals, of which I am certain the one from Leeds was against the Leeds train. On seeing this I said to the fireman, "Good God, Jack, that train's coming past the signal," at the same time opening my regulator, hoping to pull the tail of our train clear of the junction in time to save a collision, but it was too late, and the engine of the Leeds train struck about the third vehicle from the rear of my train, my speed at the time being about 25 miles an hour; that of the Leeds train I could not say. On the collision occurring the train was separated about the third or fourth vehicle from the engine, and this front portion of the train was stopped in a short distance. I am not certain what happened to the tail of the train, as I had to proceed forward to obtain assistance, &c. We felt a bit of a shake on the engine, but I was not hurt. Steam was on the engine of the Leeds train when it passed my engine, and I heard no whistle. The driver was standing up with the regulator in his hand; I could not see the fireman or the guard. The day was fine and hot.

4. *John P. Whelan*, fireman; 14 years' service, five years fireman.—I have been Orford's fireman since the 3rd June, and was with him on June 9th with the train which met with the collision. My place on the engine was on the left-hand side. My hours and Orford's were the same. I am well acquainted with the Ilkley branch and the signals at Esholt junction. I agree with the driver's evidence, except that I am of opinion that he shut off steam shortly after leaving Guiseley. We both heard the Leeds train at the same time, and Orford stepped across to my side, and seeing the Leeds train went back to his own side and put on steam. On account of the heat of the day, I could not see whether steam was or was not on the Leeds engine, but judging from the beat of the engine I think it was still on. I saw a man I took for the driver on the right-hand side with his left-hand up; the fireman was looking up from a stooping position, and looking through the weather glass. No whistle was given from either engine. I saw nothing of the Leeds guard. I noticed nothing whatever of a brake being on the Leeds train.

5. *Arthur Simpson*, guard; 17 years' service, 15 years guard.—I have been accustomed to work all the time on the Ilkley branch. I came on duty on the 9th June at 6.25 a.m. to remain till 6.20 p.m. I was guard of the 3.10 p.m. train from Ilkley for Bradford. The train from Ilkley consisted up to Guiseley of 13 (= 13½) vehicles, and on leaving Guiseley we detached the Leeds portion of the train, and it then consisted of eight (= 8½) vehicles, viz., third-class brake, third-class, two first, two thirds, third-class brake, and an eight-wheeled bogie-brake, the latter counting as 1½. I was in the rear compartment of the last vehicle, from which I could apply the automatic-brake to both train and engine. We left Guiseley at right time, 3.30 p.m., having next to stop at Esholt station. The vacuum gauge showed 20 inches on leaving Guiseley. I saw the Rawdon junction distant-signals at danger and the Guiseley starting-signal off, and after this I saw no signals till after the collision, having been occupied in making up the driver's journal. My duty was to have looked out for the junction signals at Esholt, and I was wrong in not doing so. The collision took me completely unawares, the speed at the time being about 25 miles an hour. I did not notice any increase of speed just before the collision, when I was sitting down in the rear end of the brake, making up the journal. When the collision was over, I found that my vehicle was on the rails with the hind bogie, the carriage in front of this was, I believe, on the rails, the third-class next it (the vehicle run into) was turned over on its right side on the down line. I cannot speak as to the vehicles in front of this. My brake ran a few yards after the first shock. I was bruised in my right leg, but have not had to go on the sick list. The passengers injured were in the sixth and seventh vehicles, and in the front or second compartment of the eighth vehicle. I saw the driver of the Leeds train about a quarter of an hour after the collision. There was an appearance of drink about him. I did not speak to him.

6. *William H. Brown*, guard; five years' service, guard four months.—I am well acquainted with the Ilkley branch. I came on duty at 10 a.m. on the 9th June for a four hours' shift, but having to take some exceptional duty, I should have remained on till 4. I was riding in the rear compartment of the seventh vehicle of the 3.10 p.m. train from Ilkley. After leaving Guiseley I saw the starting-signal off; after this I saw no other signals though I had nothing to do. The collision then took me unawares at Esholt junction. I was rendered insensible and recovered consciousness when I was trying to get up, I believe, from the ground, after which I was taken to Leeds Infirmary. I am on the sick-list with cut on the left cheek, bruises on the body, and generally shaken. I have been employed as porter-guard for about three years.

7. *Archibald McLay*, driver; 29 years' service, 23¾ years driver, 19 years with the Scottish Central and Caledonian Companies.—I joined the Midland Company as driver about 4¾ years since, at the time of the strike. All this time I have been accustomed to drive passenger trains between Leeds and Ilkley, and am fully acquainted with the line. I commenced work on the 9th June at 9.50 a.m., having left work on the 8th about 11 p.m., and had a good night's rest. My day's work on the 9th would have lasted about 10½ hours. I commenced work at Bradford and took the express to Leeds, left Leeds at 12.18 p.m. for Bradford, then took a train at 1.40 p.m. from Bradford to Leeds, arrived at 2.25 p.m., and then started with the 3.7 p.m. train for Ilkley. My engine was No. 179, a tender engine running engine in front, the train consisting of six vehicles. The brake was a steam-brake for the four coupled wheels of the engine and the tender wheels and the automatic vacuum brake for the train, the automatic action applying both to engine, tender, and train. My fireman was Walter Bolton, who has been with me regularly for about nine months. I was two minutes late leaving Leeds owing to station duties, and was detained two minutes at Leeds junction waiting for the 3.5 p.m. train for Bradford. We were slowed all the way to Kirkstall by signals, and then had a clear road from Kirkstall to Calverley, where we stopped and left it six minutes late, the next stop being Guiseley. On approaching Apperley junction, the next block station to Calverley, I found the signals all against me. I passed the distant-signal for Ilkley at danger, and when about half-way (*i.e.* about a quarter of a mile) from the home-signals, the one for Ilkley was lowered. Steam had been shut off shortly after the home-signal was lowered and I did not put it on again till after passing through the junction. As I passed the cabin on my left side I saw the signalman give me a green flag, which I understood to mean "Section clear, but junction blocked." I held my hand up and said, "All right" as I was passing by. This is the ordinary way of receiving this signal at Apperley junction for branch-line trains, so that the trains may not be stopped on entering the rising gradient. I am aware that the rule says that the train should be stopped before the signal is given, but I have never known it otherwise at Apperley junction. I passed through the junction at a speed of 15 or 16 miles an hour, the starting-signal having been taken off just as I received the green flag; if I gave my engine steam when the train was all clear of the junction. I then attained a speed of about 25 or 30 miles an hour, and on coming in sight of the

Esholt junction distant-signal, visible for more than a quarter of a mile, I found it at danger, and I knew I might have to stop at the junction. I slackened the steam a bit, but did not shut it off on account of the rising gradient, and I was not running more than 14 or 15 miles an hour on emerging from the tunnel. I then went to the left side of the engine to look for the home-signal, the one from Bradford being the first visible, and saw two signals off, viz., a home-signal and a distant-signal from Rawdon junction, which is below it. These signals I at first took to be mine, went over to my own side, but did not put on more steam. I did not look again at the signals till I was about an engine's length from them, and then on looking up at them I saw the same two off, and saw I had mistaken them, as the two I wanted were at danger. I at once shut off steam and applied the brake. There was no time to do anything more, and my engine then struck the third carriage from the rear of the Ilkley train, the speed having by this time been a good deal reduced. My engine and tender were both thrown on their right sides, I and the fireman going over with them. The engine ran a very short distance after striking. The vehicles next the tender remained coupled to it, but the couplings between the first and second vehicles parted. I saw the Ilkley train and the home-signal at danger about the same time. That train was moving faster than I was. I do not know what my fireman was doing between the tunnel mouth and the home-signals. Both home-signals are visible a short distance (about 20 yards) from the tunnel mouth, and the only reason I can assign for my mistake was from my being dazzled by the bright light after leaving the tunnel. I do not for a moment think that the signals had been reversed. My fireman had been attending to the lubricator on the front of the fire-box before entering the tunnel, but not by my orders that I am aware of. The lubricator had been giving some trouble all day, not dropping freely. I was a good deal shaken and insensible for a short time. I was the first to see the signals wrong, the fireman had said nothing. On seeing them wrong I said, "We have made a mistake." The only improvement I can suggest in the home-signals is that the one from Bradford should be placed on the left side of the Bradford line. I never saw the North-Eastern train at all.

8. *Walter Bolton*, fireman; six years' service, three years fireman.—I have been McLay's regular fireman since last October and I was with him on the 9th June, when my hours were the same as his. I am well acquainted with the line between Leeds and Ilkley, and know the signals well. I was fireman of the 3.7 p.m. train, my place being on the left side of the engine. We were detained by signals as far as Kirkstall, and after leaving Calverley I found the Apperley junction-signals all at danger. They remained at danger till we were about half-way between the distant and home signals when the home-signal was lowered. Steam had been shut off before we reached the distant-signal and was not put on again till after we passed junction at a speed of about eight or 10 miles an hour. Just before the home-signal was lowered the signalman showed a green flag, and held it out till we had got past, and shouted "Caution" as we went past; we both held up our hands as an acknowledgment, but nothing was said on the foot-plate; I saw that the starting-signal was lowered before we got to the home-signals. I do not think the speed ever exceeded 20 miles an hour between Apperley junction and Esholt junction. On coming in sight of Esholt junction distant-signal I saw that it was at danger, and the driver eased his steam at the distant-signal; just as we got near the tunnel I was attending to the lubricator, to see if it was working properly as the water was thick and prevented us seeing the oil dropping through. The driver had told me to look at it just before getting to the tunnel mouth. I was stooping down watching the lubricator when we emerged from the tunnel and I do not know whether the driver came over to my side or not, and I was still continuing to watch the lubricator till we had passed the home-signals, which in consequence I had never seen. We had just passed the home-signals when the driver discovered his mistake, shut off steam, and I put on the brake, the gauge showing 20 inches vacuum, the driver remarking "We are going into him." I had not seen the train before the driver made this remark. The collision then immediately occurred and the engine and tender then turned over after grazing the sides of two or three carriages in the Ilkley train. I was thrown out on the right side before the engine turned over. I was hurt in the back and head. I was not insensible and observed that the home-signal for a train from Bradford, and the distant-signal below it, were off, but I do not know when they were put up. Directly after the collision McLay said he had taken the wrong signal. I said I knew that he had as the signals were still off; this would be a minute after the collision. I know my duty was to look at signals on approaching them, but being engaged with the lubricator, I omitted to do so. I cannot account for the mistake the driver made.

9. *Arthur Miller*, guard; 25 years' service, 22 years guard.—I commenced work on the 9th June at Ilkley at 12.15 p.m., to sign off about 12 midnight. I am perfectly well acquainted with the Ilkley branch and signals. I was guard of the 3.7 p.m. from Leeds for Ilkley. It consisted of six vehicles, viz., of a third-class brake, third-class, first-class, composite, third-class, third-class brake. I was in the rear compartment of the rear vehicle, from which I could apply the vacuum-brake. We left Leeds at right time, and were detained three minutes at Leeds junction, two minutes at Whitehall, and one minute at Kirkstall. We stopped at Calverley and left it six minutes late, the next stop being Guiseley. On approaching Apperley junction the signals were at danger. As soon as we had slacked the home-signal was taken off when we were near it, and a green flag was shown from the box, meaning "Section clear, but junction blocked." I did not notice when the starting-signal was lowered. The speed on passing through the junction was five to eight miles an hour, after which it increased to not more than 20 miles an hour. I saw nothing of the signals on approaching Esholt junction, having to get luggage and parcels ready for putting out at Guiseley. It is difficult to see the signals owing to the sparks, &c. from the engine, if you put your head out, there being no projection at the side of the brake-compartment. The collision took me completely unawares, as I was standing up in the compartment, not having seen anything of the Ilkley train. I was knocked down in the van and injured in the head, and was off duty about 10 days. My vehicle did not leave the rails. I got out after about a minute, but did not look at the signals just then. I heard no remark made as to any signal being off after the collision. I am not certain about the time of the collision.

10. *George Watson*, driver; 21 years in the North-Eastern Company's service, 10 years driver.—I have been used to running between Bradford and Harrogate for the last 14 years, and on the 9th June I was driver of the 3.15 p.m. passenger train from Bradford for Harrogate. It consisted of a tank-engine, running chimney first, and six vehicles, fitted throughout with the Westinghouse brake. We had stopped at Shipley and slowed at Baildon, where we came on under the signal "Junction blocked, but section clear" to Esholt junction. On approaching Esholt junction the signals were all at danger, but on approaching the home-signals after coming out of the tunnel my home-signal, viz., the left-hand one of the two, was lowered when I was about half way between the tunnel and signals, and the distant-signal (from Rawdon junction) below it fell at the same time. We passed through the junction at a speed of about 20 miles an hour, and I passed the engine of the train from Ilkley a short distance on the Ilkley side

of the overbridge; the other train was not going fast. I am not aware when the home-signal was put to danger. I saw the signalman at the junction as I passed, but he gave me no signal. No change in the home-signal took place after it was lowered. I saw that the home-signal from Leeds was at danger.

11. *Seth Hardaker*, locomotive inspector, on the platform at Leeds.—I have filled this position about nine months. I saw McLay on the 9th of June doing something in front of his engine shortly before the departure of the 3.7 p.m. train from Ilkley. I was on No. 3 platform, and his train was starting from No 2. So far as I saw he was all right.

12. *Thomas Lane*, foreman shunter in Leeds station; 16 years' service, 11 years foreman shunter. —I was on duty on the 9th June when the 3.7 p.m. train was starting for Ilkley. I saw McLay bringing his engine on to the train, and he appeared to manage it properly. He passed within a few feet of me. I had no conversation with him, but so far as I could see he was quite himself, and I have never seen him otherwise.

Conclusion.

The immediate cause of this very serious collision was want of reasonable care on the part of McLay, the driver of the train from Leeds for Ilkley, when approaching Esholt junction. McLay had been warned (and acknowledges he understood the warning) at Apperley junction that though the line was clear for him to run to Esholt junction, he might be stopped at the junction; on approaching the Esholt junction distant-signal he found it at danger, but on coming in sight of the junction home-signals, visible about 280 yards off when about half way through a short tunnel 60 yards in length, he saw one of them and the distant-signal below it "off," and concluded that these were the signals referring to the line he was running on, though they were really those applying to the line from Bradford to Ilkley, these latter signals having been lowered for a North-Eastern Company's passenger train which had just passed the junction. Immediately after the first possible view of the junction home-signals the one from Leeds becomes obscured for some 40 or 50 yards by a bush in the side of the cutting, after which both signals again become visible; and it must have been during these 40 or 50 yards that McLay saw the home-signal lowered, and concluded that it was for his train, forgetting (although he had been continually during the last $4\frac{3}{4}$ years driving trains between Leeds and Ilkley) that when one signal only was visible it was the one for the line from Bradford and not from Leeds. McLay had stepped over from the right side to the left side of the foot-plate to look for the junction home-signals, and having as he thought seen the one he wanted lowered, went back to his own side, did not look again at the signals until he had got within an engine's length of them, when on looking up he saw the mistake he had made and, at the same time, the train from Ilkley crossing the junction. He thinks his speed at this time was not more than 14 or 15 miles an hour as he had slacked off his steam (but had not shut it off entirely on account of the sharp rising gradient of 1 in 60) on finding the junction distant-signal at danger, and had not reapplied it after seeing as he thought his home-signal "off"; on realising his mistake he at once shut off steam and applied the continuous-brake, and thinks his speed had been a good deal reduced upon his engine striking the third carriage from the rear of the train from Ilkley. The engine and tender ran a very short distance after the collision, and then turned over on their right sides.

McLay had joined the Midland Company's service at the time of the driver's strike, $4\frac{3}{4}$ years ago, having been previously a driver on the Scottish Central and Caledonian Railways for a period of 19 years. He had commenced work on the 9th June at 9.50 a.m., and would have signed off about 8.30 p.m., having left work the previous day about 11 p.m., after which he had had a good night's rest. He had thus been on duty about $5\frac{3}{4}$ hours at the time of the collision. His general character for attention to duty, sobriety, and competency during his service on the Midland Railway has been good, and there is not the slightest reason to suspect that he was under the influence of drink on the present occasion. Under the circumstances, he has made the best amends in his power for his very serious mistake by frankly confessing his fault, and by not attempting to implicate other servants of the Company.

McLay's fireman, Bolton, who has been with him since last October, and has a good knowledge of the line between Leeds and Ilkley, corroborates McLay's evidence as to what took place up to Apperley junction; his place was on the left side of the engine, and on approaching Esholt junction at a speed not exceeding, he thinks, 20 miles an hour, he saw the distant-signal at danger and then, instead of looking out for the junction home-signal, he says he occupied himself in attending to a lubricator, which was not working properly, but about the state of which the need of attention was not urgent, and was doing this till they had just passed the home-signals, when McLay discovered his mistake, saying: "We are going into him," and shut off steam, he

himself applying the automatic-brake. He had seen nothing of the other train before McLay's remark, and on the collision occurring was thrown out from the right side of the foot-plate before the engine and tender turned over, and was hurt in the back and head. Directly after the collision Bolton says that he saw the junction home-signal for the line from Bradford and the distant-signal below it still "off."

It was Bolton's duty to have looked out for the Esholt junction home-signals as he approached them; his conduct in neglecting to do so is deserving of serious blame and cannot be excused by his attention having been directed, whether or not by the driver's instruction, to the lubricator, about which there was no such special emergency as to prevent the much more important duty of looking out for junction signals being first attended to. Bolton has been employed as fireman for three years, and had been on duty about $5\frac{3}{4}$ hours out of a day's work of $10\frac{1}{2}$ hours when the collision occurred.

Miller, the guard of the train, riding in the rear compartment of the rear vehicle, from which he could apply if necessary, the continuous brake, was aware from what he saw on passing Apperley Bridge junction that his train was approaching Esholt junction under the block signal "Section clear but junction blocked." On approaching the junction at a speed not exceeding he thinks 20 miles an hour, he was engaged in getting luggage and parcels ready for putting out at Guiseley, the next station, saw nothing of the junction signals and was taken completely unawares by the collision, by which he was knocked down and injured in the head. It was certainly Miller's duty to have looked out for the Esholt junction signals with which he was perfectly familiar, and he must be blamed for not having done so. Had he not neglected his duty he might have seen the mistake his driver was making and could easily have stopped the train by the application of the continuous-brake. Miller has been 22 years a guard, and had come on duty for a spell of $11\frac{3}{4}$ hours about $3\frac{1}{2}$ hours before the collision.

No blame is to be attached to the driver or fireman in charge of the train from Ilkley for Bradford. Orford, the driver of the train, on approaching Esholt junction saw the distant-signal for Bradford taken off as he was passing it, and on coming in sight of the home-signals, when about 200 yards from them, found the one for Bradford "off." He passed the engine of the North-Eastern train from Bradford near the home-signals just as he had shut off steam for running through the junction, the speed being about 20 miles an hour. He had just passed the signal-cabin when he heard the beat of an engine approaching on the line from Leeds, and on looking through the left-hand weather-glass saw the engine coming past the home-signals, the one from Leeds being at danger. He called to his fireman and gave his engine steam, hoping to pull his train clear of the junction in time to save a collision, but the engine of the Leeds train caught the third vehicle from the rear of his train causing a severance about the centre of the train, the front portion of which was stopped after running a short distance. Orford says that when the engines passed each other steam was still on the Leeds engine, and the driver was standing up with the regulator in his hand, but that he did not see the fireman.

Orford's fireman states that both he and Orford saw the Leeds train about the same time; that he thinks from the beat of its engine that steam was still on, though the heat of the day prevented steam being visible; that he saw a man he took for the driver standing on the right side of the foot-plate, with his left hand up, and the other man looking up from a stooping position through the weather-glass. In other respects he more or less corroborates Orford's evidence.

Both guards of the train were taken unawares by the collision, and were both injured, the front one seriously. Neither of them had looked out for the Esholt junction signals, and are both to be blamed accordingly.

The driver and fireman of this train had been on duty about $4\frac{1}{4}$ hours out of 10 hours, the head guard about nine hours out of 12, and the under guard $5\frac{1}{2}$ hours out of six, at the time of the collision.

The driver of the 3.15 p.m. North-Eastern passenger train from Bradford for Harrogate, which passed Esholt junction just before the collision, approached the junction from Baildon (where he had been nearly stopped) under the "Section clear, but junction blocked" signal, and on emerging from the tunnel near the junction found the junction home-signals both at danger; the left-hand one, that applying to his train, was lowered when he was still some distance from it, that for the line from Leeds remaining at danger. He was not aware when the home-signal for his train was put to danger. He passed the engine of the train from Ilkley near an overbridge, close to the junction home-signals.

I'Anson, the signalman on duty at Esholt junction, had accepted the train from Ilkley when offered from Rawdon junction at 3.24 p.m. He accepted the train from Leeds under clause 16, viz., "Section clear, but junction blocked," when offered from Apperley junction at 3.25 p.m., and at 3.27 p.m. the North-Eastern train when offered a second time from Baildon, also under clause 16. He kept all his outdoor signals at danger until the North-Eastern train from Bradford emerged from the tunnel, when he lowered the home-signal for it, and then the home and distant signals for the train from Ilkley. The North-Eastern train passed the junction at 3.33 p.m., not going very fast, as the home-signal had been against it, the Ilkley train coming in sight about the overbridge near the home-signals, and the engines of the two trains passing each other about this bridge. The engine and one carriage of the train from Ilkley had passed the cabin, the speed being moderate, when I'Anson first caught sight of the Leeds train, its engine being then, he thinks, about 80 yards from the home-signal, but it was not until the engine of the Leeds train was close to the home-signals, and the engine of the Ilkley train was just clear of the junction crossing, that he saw a collision was imminent. There was nothing he could do to avert the collision, as he thought if he showed a red flag it might cause the driver of the Ilkley train to slack his speed, whereas he hoped if he kept his steam on it might clear the junction in time. I'Anson thinks he put back the home-signal, which had been lowered for the North-Eastern train, before the train from Leeds emerged from the tunnel. (If I'Anson is correct in this it shows that McLay must have got a glimpse of the signal from Bradford just before it was put to danger.) He says he noticed that it went properly to danger when he put back the lever, and that he at the same time saw the home-signal from Leeds at danger. No damage was done to the interlocking arrangements by the collision, and though some of the signal wires were injured, no signals were in consequence pulled off.

I'Anson has been 10 years in the service, $1\frac{3}{4}$ years a signalman, and had been employed 11 months in Esholt junction-cabin, where he had come on duty on June 9th at 5 a.m. to remain till 4 p.m., and had therefore been on duty about $10\frac{1}{2}$ hours when the collision occurred. He appears to have committed no breach of rules in regard to this collision.

Aubrey, the signalman on duty at Apperley junction, on asking Esholt junction "Is line clear" for the Leeds train, and getting it accepted under clause 16, *i.e.*, "Section clear, but junction blocked," kept the home-signal against the train till it was about 400 yards from it, then lowered it, and gave the driver a green flag as he passed the cabin at a speed of about 10 miles an hour. He was on the point of calling out "Junction blocked" when the driver nodded and held up his hand, implying that he understood what was meant. Aubrey acknowledged that he had no authority for departing from the instruction in clause 16 of the block telegraph regulations, which directs that a train must be stopped before being allowed to proceed under the signal "Section clear, but junction blocked," but that in consequence of the long rising gradient of 1 in 60, which commences about 200 yards on the Esholt junction side of the cabin, it has been customary not to bring trains proceeding to the branch to a stand, though as regards main line trains, for which the gradient is easy, the rule is strictly observed. Aubrey was of course not justified in thus taking it upon himself to disobey the instruction of clause 16; but as the fact of this instruction being habitually disobeyed must have been known to the signal inspector of the district, Aubrey can hardly be much blamed for his action. It would have made no difference in this instance if the train had been absolutely stopped, as the driver acknowledges he was aware of the rule under which he was allowed to approach Esholt junction.

The occurrence of this collision, and of the other recent one near Birmingham under somewhat similar circumstances, directs special attention to the practice of the Midland and other companies of allowing trains (which cannot be prevented by facing-points from coming into collision) to approach junctions simultaneously under the provisions of clause 16 of the block telegraph regulations. If this rule could have been prudently used under any circumstances these certainly existed both at Esholt and Birmingham, as in both cases the junctions were approached on steep rising gradients, where there ought not to have been the slightest difficulty in stopping had the drivers being only exercising a moderate amount of caution. These two very serious collisions having, however, occurred under circumstances most favourable for the safe carrying out of the rule under which the junctions were being approached, it is certainly quite time that the rule as regards junctions was abandoned, and that no junction should be

allowed to be approached simultaneously by trains which can come into collision by junction-signals being overrun; and it is the opinion of the inspecting officers that railway companies will not be complying with the recent orders as regards block system made under the Regulation of Railways Act, 1889, if trains which can come into collision through the overrunning of signals are allowed to approach junctions simultaneously under the provisions of that clause of the block telegraph regulations, which permits the use of the signal "Section clear, but junction blocked."

With regard to Esholt junction the bush which obscured the driver's view of the home-signal from Leeds for a distance of 40 or 50 yards has, I understand, been removed. It would be an improvement in the arrangement of the home-signals from Leeds and Bradford if the latter were placed on the left side of the line from Bradford; it would be then out of sight of a driver of a train from Leeds until for some distance after he had seen his own signal, and would make such a mistake, as caused the present collision, almost impossible.

I have, &c.,
C. S. Hutchinson,
Major-General, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Particulars of Damage to Engine, Rolling Stock, and Permanent-way caused by the Collision at Esholt Junction on the 9th June 1892.

Vehicles damaged in 3.10 p.m. Train, Ilkley to Bradford.

Bogie third brake, No. 372.—Leading end and both sides at same end damaged.

First-class, No. 65.—One foot-board slightly damaged.

First-class, No. 66.—Two axle-boxes badly broken; headstock end, side rail, side of body, and foot-boards damaged.

Third-class, No. 199.—Underframe damaged; axle boxes broken; axle-guards bent; headstock damaged; corner of body and sole-bar end badly damaged, and axles of wheels slightly bent.

Third-class, No. 191.—Smashed all to pieces, and axles of wheels badly bent.

Third-class brake, No. 1502.—Body completely torn off, headstock badly damaged, and axle-boxes smashed.

Damage to Engine No. 179 of 3.7 p.m. Train, Leeds to Ilkley.

One engine-buffer beam and plate broken; one engine-buffer broken; one lamp-iron broken; smoke-box front and door bent; one leading spring-hanger damaged; one leading engine axle-box broken; one Furness lubricator broken; four leading footsteps broken; one clack-box broken; one weather-board front-plate broken; two trailing foot-steps broken; left-hand leading horn-plates and frame bent; combined hand-rail and vacuum-pipe broken; two side-links and draw-bar damaged; two side-rods bent; brake-stretchers damaged brake-hangers damaged; feed and vacuum pipes damaged; two head-lamps broken.

Damage to Tender of Engine No. 179.

Two footsteps broken; combing left-hand side damaged; brake-handle damaged; feed-pipes damaged.

Damage to Vehicle.

Third-class brake, No. 64.—One end of roof damaged, and steps slightly bent.

Damage to Permanent-way.

2 85-lb. rails broken; 54 45-lb. chairs broken; 6 crossing timbers broken; 8 sleepers broken.

Printed copies of the above Report were sent to the Company on the 5th August.

MIDLAND RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
18th November 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 3rd instant, the result of my enquiry into the collision that occurred on the 31st ultimo, at Kentish Town station, on the Midland Railway.

On this occasion, as the train from Kentish Town to Victoria, due to leave the former place at 5.54 p.m., was standing at the platform, it was run into in rear by the 12.55 p.m. express train from Bradford to St. Pancras, which was due to stop at Kentish Town at 5.57 p.m.

Ten passengers are reported to have complained of minor injuries.

The Victoria train consisted of tank-engine No. 1719, and ten vehicles in the following order, a third-class brake, a third-class carriage, two first-class carriages, two third-class brakes, two first-class carriages, one third-class, and one third-class brake. The engine was fitted with a steam-brake, and the train with the automatic vacuum-brake, one handle on the engine applying both steam and vacuum-brakes simultaneously.

The Bradford train consisted of single-wheeled engine No. 145, six-wheeled tender, and eight (equal to nine) vehicles, marshalled as follows:—A van, a composite, two thirds, two bogie composites, a van, and last of all a saloon. The train was fitted with the automatic vacuum-brakes, and the engine with the steam-brake, both brakes being applied simultaneously by one handle on the engine.

The engine and leading van on the express, and nine of the vehicles on the Victoria train, were more or less injured, the leading van on the former and the rear (third-class brake) carriage on the latter suffering the most. For details of damage to rolling stock, *see* Appendix.

The permanent-way was not affected.

Description.

There are two passenger lines running through Kentish Town station, and two goods lines outside and to the west of the station. The collision occurred on the up main line, a few yards from the north end of the up platform. At the north end of the station there is a tunnel about 50 yards long, and 50 yards north of the tunnel there is the Kentish Town junction signal-cabin. Beyond the signal-cabin there are some carriage sidings on the east, or up side of the main lines, with a trailing-point connection on the up main line.

The up main home-signal for Kentish Town junction is outside this siding connection, and about 100 yards north of the cabin, and the up main starting-signal is at the mouth of the tunnel, or about 50 yards south of the cabin. The next signal-cabin in the direction of London is the Islip Street box, which is about 420 yards south of Kentish Town junction, and the Islip Street up main home-signal is situated about 105 yards north of the cabin, or 260 yards from the starting-signal from Kentish Town junction.

Kentish Town station, the platforms of which are 165 yards long, lies midway between the Kentish Town junction up starting-signal and the Islip Street up home-signal.

The traffic is worked on the absolute block system between the two signal-boxes referred to, and before any train is permitted to pass the Kentish Town junction starting-signal into the section ahead, the permission of the Islip Street signalman should be obtained in the manner laid down in the block regulations.

The traffic on the main lines through Kentish Town is, as may be imagined, very large, and it has not been found practicable to keep train books, in which to record the giving and receiving of the various block telegraph signals, in either of the above signal-cabins.

An express train from Manchester is due to pass, but not to stop at, Kentish Town at 5.50 p.m.; the Victoria train is due to start from the same place at 5.54 p.m.; and the express train from Bradford is due to stop at Kentish Town at 5.57 p.m.

On the day in question the Manchester train was running 25 minutes late, and the Bradford train was reported five minutes late at Luton, but as a matter of fact the latter arrived at Kentish Town at its proper time.

The view into the station from both the Kentish Town junction and Islip Street signal-cabin is very bad, owing in the one case to the tunnel, and in the other case to two intervening bridges, and when as constantly happens, the tunnel or bridges are full of steam or smoke, the signalmen at both cabins are unable to see the station at all.

The collision caused the trailing-wheels of the rear vehicle of the Victoria train to leave the rails, and the down line was thereby fouled, but fortunately a down train which was nearly due was stopped before it reached the spot.

Evidence.

John White Talbot, engine-driver, said: I have been in the service 20 years, a driver eight years, stationed at Kentish Town all the time, and accustomed to run with Metropolitan and main-line trains. On 31st October I came on duty at 1.55 p.m. to take charge of the Kentish Town pilot engine until 5.40, then to work the 5.54 p.m. passenger train from Kentish Town to Victoria, the 7.32 p.m. from Victoria to South Tottenham, return with the 9.28 p.m. from South Tottenham to Moorgate Street, then the 10.41 p.m. from Moorgate Street to Hendon, returning with light engine from Hendon to the Kentish Town

engine-shed, and signing off duty about 12 o'clock midnight. I signed off duty the previous night at about 11.15 p.m., after being on duty about eight hours. I left Kentish Town sidings with the empty carriages for the 5.54 passenger train to Victoria, and brought the train to a stand at the up platform at about 5.53. When the train was due to start my guard said, "I "am ready as soon as the Islip Street signal is "lowered," and after waiting, possibly a minute, that signal was lowered, and I started, and after proceeding, perhaps half a carriage length, the collision took place, causing me to fall towards the coal bunker, and then against the reversing lever. I feel the effects, although I am still at work. I think my engine was driven forward about the length of a carriage when it came to a stand in consequence of the brake gearing being damaged, and the brake being automatically applied. My train consisted of engine No. 1719, with driving and leading wheels coupled, and with a four-wheeled bogie under the foot-plate. The driving and leading wheels of the engine are fitted with steam brake, and the whole of the carriages with the automatic vacuum-brake, the steam-brake on the engine and the automatic vacuum-brake on the train being worked by one handle from the foot-plate. My engine was running bunker first, and was not damaged. The brake throughout the train was off at the time the collision occurred. Directly after the collision took place I went to the rear of the train to see what was amiss, and found that the engine of the Bradford express had come into collision with the rear of my train, and had considerably damaged the rear vehicle. I afterwards ascertained that the down passenger line was fouled, and that my guard had been to the Islip Street signal-box to protect the obstruction.

Edwin Buxton, fireman, said: I have been in the service five years, four years a fireman, and have been stationed at Kentish Town all the time. On 31st October I came on duty at the same time as driver Talbot, to act as fireman. I had been off duty since 1.41 p.m. on the 29th, after working Metropolitan passenger trains, having been on duty 10 hours and 6 minutes. I have heard the evidence given by my driver. It is correct. When the collision took place I was forced against the fire-box and received a slight bruise on my right leg, but I have been able to continue at my work. I remained with my engine during the time my driver went to the rear of the train to ascertain what had taken place.

Joseph Woodford Barrs, passenger guard, said: I have been 12½ years in the service, and a passenger guard 4½ years, and have been stationed at Kentish Town and accustomed to work Metropolitan and main line passenger trains the whole of the time. On October 31st I came on duty at 7.20 a.m. to work city and suburban passenger trains until 12.36. I was off duty from 12.36 until 4.30. I then commenced to work city and suburban passenger trains from 4.45, and should have finished my duty at 9.46. I left duty at about 12.20 a.m. on October 30th, after having been on duty about 11 hours. I was on Kentish Town up passenger platform when the empty carriages for the 5.54 passenger train for Victoria arrived at about 5.52 or 5.53. The train was ready to leave at 5.54, right time, and I gave the front guard a signal for it to start, but it did not do so for about a minute. I walked alongside the train and then saw that the Islip Street home-signal was at danger. Shortly afterwards it was lowered, and I then gave another signal for the train to start. It was started in obedience to my second signal and when it had moved about half a carriage length and as I was walking towards my brake, which was the rear compartment of the train, I saw the engine of the Bradford express coming from under the bridge, which was filled with steam. I at once showed a red light with my hand-lamp, but practically at the same moment the collision took place, considerably damaging the rear portion of the last vehicle on my train. I at once looked on the six-foot side and found that the down passenger line was fouled. I had remembered seeing some detonators at the telegraph office alongside the platform. I at once obtained them and passed through one of the carriages on my train to go and protect the down line. There were about four or five passengers in the front portion of my train, and they all left it directly the collision took place. I showed a red light as I ran towards Islip Street, and the signalman at Islip Street signal-box noticed my red light and placed to danger the signals that had been lowered for the 5.47 passenger train from St. Pancras to enter the station. This train was brought to a stand at Islip Street down home-signal, and I remained at the signal-box until the down line was cleared. My train consisted of the following:—A tank-engine and 10 vehicles in the following order: third-class brake, one third, two first, two third-class brakes, two first, one third, and one third-class brake.

George Broom, porter guard, nearly three years in the service, said that he had been a porter guard about 10 months, had been stationed at Kentish Town during that time and accustomed to work as under-guard with the Metropolitan trains when required.—On October 31st I came on duty at 11 a.m. until 2 p.m., and from 5 p.m. to 12.15 midnight to act as porter on the platform or as porter guard if required. At about 5.15 p.m. platform inspector Wiltshire instructed me to work as under guard with the 5.54 train to Victoria in place of guard Donally who was going to have some time off duty. I have heard the evidence given by guard Barrs, and it is correct. When Barrs gave the first signal for the train to start I noticed the Islip Street home-signal was at danger, and I said to the driver: "We are ready when the signal is lowered." In about a minute the signal was lowered and Barrs gave another signal for the train to start. I blew my whistle, the driver started, and I had just entered my brake, which was the first compartment next the engine, when the collision took place. I was forced against the side of the brake compartment and received a slight bruise on my right hip and a slight wound on the right side of my head, but I have been able to remain on duty. I felt somewhat stunned for a short time, but I very quickly went to the rear of the train, and having ascertained that the down line was obstructed I made the best of my way to Islip Street, but I found guard Barrs there on my arrival.

Robert Thompson, engine-driver, 28 years in the service, said: I have been an engine-driver about 22 years, and have been stationed at Kentish Town all the time. On October 31st I came on duty at 7.27 a.m., after being off duty from about 11.45 p.m. on the 28th to work the 9 a.m. express from St. Pancras to Nottingham, and the 3.27 p.m. from Nottingham to St. Pancras. I left Nottingham punctually. My train consisted of engine No. 145 (which is a single-wheeled engine), six-wheeled tender, and eight, equal to nine vehicles. The driving wheel of the engine, and the six wheels of the tender, were fitted with steam-brake, and the whole of the carriages with the automatic vacuum-brake, both brakes being worked with one handle from the foot-plate of the engine. My train was stopped by the application of the continuous brake at Melton, Kettering, and Wellingborough. I also reduced the speed of the train by the use of my brake at other points on the journey, and it was in good working order. On approaching Finchley Road the signals were lowered, but I shut off steam in order to be prepared for the Carlton Road signals being at danger. On sighting the Carlton Road distant-signal I found it at danger, but when I sighted the home-signal it was lowered. The Cattle Docks junction distant-signal was at danger, but when I sighted the home-signal it was lowered. The Kentish Town junction distant-signal was at danger, but the home-signal was lowered when I sighted it. When about 100 or 150 yards north of the Kentish Town

junction home-signal I noticed that the starting-signal, which is north of the Kentish Town Road bridge, was at danger. I touched my whistle, and this signal was directly afterwards lowered. I was preparing to bring my train to a stand as booked at the Kentish Town up platform. When passing under the Kentish Town Road bridge it was full of steam, and as soon as I could see ahead I noticed a train which appeared to me to be standing at the platform. I at once forcibly applied the continuous brake, but was unable to bring my train to a stand before coming into collision with the rear vehicle on the train in front, causing the rear pair of wheels of the vehicle with which my engine came in contact to leave the rails, and forcing the side of the carriage foul of the down line. No wheels of my engine or any of the carriages on my train left the rails. The framing of the engine and the vacuum-brake pipe were damaged. I estimate the speed of my train at the time of the collision at seven or eight miles an hour. I at once ascertained that the guard of the Victoria train had gone to Iship Street to protect the down line. I had about 150 lbs. of steam, and 20 or 21 inches of vacuum when I applied the continuous-brake, and I feel satisfied that the brake was fully applied before the collision took place. I received a slight shaking, but nothing to speak of. I have continued at my work. I did not see the tail-lamp, but saw the top of the coach, and I told my fireman "to look out." I took my brake off when the junction starting-signal was lowered so as to let the train draw slowly in, and I reapplied it with full force as soon as I saw the train in front of me. But there was not time to reduce the speed very much.

Frederick Henry Franklin, fireman, in the service eight years, said that he had been a fireman a little over five years, and had been stationed at Kentish Town all the time.—On October 31st I came on duty with driver Thompson to work with him during the day. I left duty with him at about 11.45 p.m. on October 28th. I have heard the evidence given by driver Thompson. It is correct. I have nothing to add. I saw the tail lamp of the Victoria train as it was standing at the platform, just as my driver drew my attention to it.

Albert Stretten, passenger guard, said: I have been in the service 19 years, a passenger guard 16 years, and have been stationed at St. Pancras nearly the whole of the time. On October 31st I came on duty at 4.45 a.m. to work the 5.15 a.m. passenger train from St. Pancras to Bradford, due to arrive at Bradford at 11.10, and the 12.55 from Bradford to St. Pancras, due to arrive at 6.4 p.m. I left duty on the 29th at about 6.0 p.m. My train, which departed from Bradford punctually, on leaving that station consisted of nine vehicles, equal to 10. At Sheffield I detached three vehicles, and at Nottingham I attached one saloon. On leaving Nottingham my train consisted of engine, tender, eight vehicles equal to nine, made up in the following order:—leading van, composite, two thirds, two bogie composites, van, saloon in rear. I travelled in the brake-van, which was the last vehicle but one on the train. I left Kettering punctually, and an extra stop was made by the train at Wellingboro' for the purpose of taking up passengers. We approached Kentish Town practically at our booked time. The distant-signals from Carlton Road junction to Kentish Town were at danger when my train passed them, but the home-signals were lowered. The first intimation that I had of anything wrong was the brake being suddenly applied, or the collision taking place. I cannot say whether the brake was fully applied before the collision took place or not. I was sitting on the 6-ft. side of my van from Haverstock Hill to just before reaching Kentish Town junction, and saw the signals from my seat. Just before arriving at the junction I went to the near side of my van and let down the window, and as I did so the train was brought to a sudden stand. My head came in contact with the door-frame and my right eye was slightly discoloured. I have not had to cease duty. I left my van, which, as near as I can say, came to a stand at the north end of the Kentish Town Road bridge, and as I could not get at my fog-signals, and as my hand-lamp was broken all to pieces I went to the Kentish Town junction signal-box and obtained fog-signals from the signalman, and placed them on the rails opposite to the signal-box. I had a conversation with signalman Crossley and then returned to my train and assisted passengers in leaving the carriages. None of the passengers complained to me of injuries. I think my train passed the Kentish Town junction at a speed of from eight to 10 miles an hour.

Robert George King, signalman, 16 years in the service, said: I have been a signalman nearly 15 years, and have been at Islip Street nearly four years. On October 31st I came on duty at 2 p.m. to remain until 10 p.m. I left duty previously at 6 a.m. the same day. There are three signalmen at Islip Street signal-box, with eight hours duty each, except on Sundays, when two men work 12 hours each, the third man being off duty. The block telegraph signals are not recorded at Islip Street. At about 5.55 I received the "Is line clear" signal for an up passenger train, four beats on the bell, and three of the needle to the right, and I forwarded these signals to Camden Road on receipt. Before lowering my signal for the up train to leave Kentish Town station I waited to receive the "Train entering section" signal from Kentish Town junction. I then received two beats on the bell and four beats of the needle on the left, which indicated that the train was one going to St. Pancras passenger station. I at once called the attention of Camden Road for the purpose of giving the "Train entering section" signal. At this moment I looked towards Kentish Town, and saw the engine head-lights of a train standing at the platform. I therefore lowered the signal for it to proceed to Camden Road before actually giving the "Train entering section" signal. The two bridges between my box and Kentish Town station had previously been full of steam, and I had not been able to see the engine standing at Kentish Town station. The engines of passenger trains going to Victoria carry head-lights in the same position as engines of trains going into St. Pancras, and when the steam had cleared away I noticed that the engine at the platform had a white light at the foot of the chimney and one over the left-hand buffer, and having received the first signal for a fast passenger train and the "Train entering section" signal for a train going to St. Pancras I arrived at the conclusion that the train at the platform was the North express. Shortly after I lowered my signal I heard a noise, and a little time afterwards I saw a red light on the down passenger line. I had then given permission for the 5.47 p.m. slow passenger train from St. Pancras to St. Albans to approach, and had lowered my signals for it to enter Kentish Town station. I at once placed the signals for the down passenger line to danger, and the driver of the St. Albans train brought it to a stand at my home-signal.

Alfred Crossley, signalman, said: I have been in the service nearly 23 years, have been a signalman all the time, and have been in charge of Kentish Town junction-box 21½ years. On October 31st, I came on duty at 2 p.m. to remain until 10. I left duty at 6 a.m. the same day, after being on duty 12 hours. Kentish Town junction is an eight hours' post, three men performing the duties, and on Sundays two men work 12 hours each, the third man being off duty. There are also two assistant signalmen employed at Kentish Town junction, one commences duty at 6 a.m. and remains until 3 p.m., the other commences duty at 3 p.m., and remains until 12 midnight; from midnight until 6 a.m. there is no assistant signalman

on duty. Between 2 p.m. and 4 p.m. I performed the whole of the block signalling and movements of the levers myself. The assistant during this time was engaged cleaning the signal-box and attending to other small matters. In accordance with my usual practice the assistant commenced to attend to the signalling work at 4 p.m., whilst I had some tea. During the time the assistant is performing the duties I direct his movements, and he acts under my instructions. The express from Manchester was reported to me as running 25 minutes late, and the north express was reported as running five minutes late from Luton, and in front of the Manchester. The Manchester train is due to pass Kentish Town at 5.50, the Victoria train is due to leave Kentish Town at 5.54, and the North express is due to arrive at 5.57. At about 5.50 I told my assistant to let the Victoria empty carriages out of the sidings into the station, and he did so, I believing that he had signalled the same on the block telegraph to Islip Street. At about 5.52 I received from the Cattle Docks junction the "Is line clear" signal for an up express passenger train, and this was earlier than I expected to receive such signal. I therefore asked the signalman at Cattle Docks junction by the use of the telephone if he knew that the Manchester train was running late, and he replied that he did not, but as there was no reason why I should not retain the signal for the North express I did not ask the signalman at Cattle Docks junction to withdraw it. I afterwards said to my assistant, "We will have the North express into the station." I lowered the home-signal myself when the train was passing under the Tottenham and Hampstead bridge, and I then told my assistant to lower the starting-signal. I had previously noticed that the Islip Street needle for the up passenger line was pegged to "Line clear," and I arrived at the conclusion that the Victoria train had left the station, and that my assistant had received the "Train out of section" signal for it, and had forwarded the "Is line clear" signal for the up express. I did not tell my assistant to forward the "Is line clear" signal to Islip Street. The Bradford train passed the junction at about the usual speed that trains run, which have to stop at Kentish Town station. The number of miles per hour I am not competent to state. The first intimation I had that anything was wrong was a noise I heard in the station and the express coming to a stand with the brake near to the Kentish Town road bridge. I at first thought that the express had left the rails in the station, but shortly afterwards the steam cleared away from the bridge, and I could then see that there was a train in the station on the up passenger line. I then said to my assistant: "Why, the Victoria train has not left," and I arrived at the conclusion that the Victoria train had been signalled by my assistant to Islip Street, and that he had omitted to give the "Train entering section" signal for that train. I have, however, heard the evidence given by signalman King at Islip Street, and I now believe that the Victoria train entered the station without any signals being given for it, and that the "Is line clear" signal that was given by my assistant to Islip Street was the "Is line clear" signal for the express. I believe the last train that passed through the station on the down passenger line before the collision took place was the 5.43 p.m. from St. Pancras.

Edward Berry, assistant signalman, in the service about 11 years, a signalman about 10 years, and assistant at Kentish Town junction about eight months, said: On October 31st I came on duty at 3 p.m. to remain until 12 midnight. I left duty on the 29th at 3 p.m. after being on duty nine hours. Between 3 and 4 p.m. I attended to the signal-box fire, did some cleaning up, and looked after other matters. At 4 I commenced to work the levers and signalled the trains, to a certain extent under signalman Crossley's directions, although I thoroughly understand the working of the junction myself; but as regards giving precedence to trains or holding them back, I had signalman Crossley to appeal to as to what I should do. In consequence of the express from Manchester being reported 25 minutes late, Crossley instructed me at about 5.50 to let the Victoria empty carriages into the station, and I did so. Some time afterwards Crossley accepted the "Is line clear" signals for the North express, and he said something to me about it being let into the station, and I replied that the "Is line clear" signals are already forwarded, or words to that effect. Crossley then lowered the home-signal for the train to enter, and I lowered the starting-signal; but whether Crossley requested me to do so or not I do not remember. After the accident had taken place I believed that it had been brought about by my omitting to forward the "Train entering section" signal for the Victoria train; but since I have heard the evidence given by signalman King at Islip Street I believe I allowed the Victoria empty carriage train to leave Kentish Town sidings without signalling it to Islip Street, and when the North express was signalled it did not occur to me that I had allowed the Victoria train to enter the station without being signalled. I have never made it a practice to permit a train to enter the Kentish Town up platform without obtaining permission from Islip Street signal-box for it to do so.

Conclusion.

This collision, though fortunately unattended by any serious consequences, is one of considerable gravity, owing to the circumstances attending it. Absolute block working is in force on the line, the signal-boxes are close together so as to facilitate traffic, the signalmen are men of high character and long experience, the hours of duty are moderate, and yet an express train was allowed to enter a section which was already occupied by a train standing at the platform with the results already described. Had the guard of the Victoria train been in his van at the time the collision occurred, or had the express train not been timed to stop at Kentish Town station, the results of the collision would in all probability have been much more disastrous.

The evidence makes it clear that the collision was due to a breach of the block telegraph regulations.

Signalman Crossley, who is in charge of the Kentish Town junction cabin, having been informed that the Manchester express, due to pass his cabin at 5.50, was 25 minutes late, rightly decided to let the train for Victoria, which was due to leave at 5.54, start at its proper time. This train was standing in the carriage sidings adjacent to his cabin. Before lowering his starting-signal to allow this train to enter Kentish Town station, he should have obtained the permission of the Islip Street

signalman in accordance with the block regulations for it to enter the latter's section. Both Crossley and his assistant omitted to obtain this permission, and the Victoria train entered the station, without any intimation being given to the Islip Street signalman, in whose section the station is situated, that it had done so. The Islip Street home-signal was therefore not lowered for the train to proceed, and the latter, therefore, was compelled to remain at the platform. Shortly after this, the Bradford train, which was due to reach Kentish Town at 5.57, but which had been reported five minutes late at Luton, was offered to Crossley by the Cattle Docks junction cabin, the train having apparently made up time. The Victoria train was still standing at the platform waiting for the Islip Street home-signal, which is 50 yards in advance of the station, to be lowered for it to start. When Crossley received the "Is line clear" message for the express he accepted it, and lowered his home-signal for it, and he subsequently directed his assistant Berry to lower the starting-signal for it also. About the same time Berry signalled the express forward to Islip Street on the block instruments, and the signalman at Islip Street being in ignorance of the Victoria train being in his section, accepted the express, and after obtaining permission from the Camden Road cabin, he lowered his home-signal for it. As soon as this signal was lowered the driver of the Victoria train, who had been waiting for it, started his train from the platform, but he had only moved forward a few yards when his train was run into by the express.

From the above it appears that signalmen Crossley and Berry having permitted the Victoria train to enter the Islip Street section without the permission or knowledge of signalman King, forgot all about it, and allowed the Bradford express to run into the station while the Victoria train was still waiting in vain for King, who knew nothing of it, to lower his signal and so allow it to start. This is the signalman's own story, and in the absence of any other evidence it must be accepted as correct. It is unfortunate that it has not been the custom to keep train books in the cabins named, as, in the absence of such books, there is no record, other than a man's memory, of the sequence, time, and nature of the block telegraph signals given and received for the different trains.

But the explanation given by the men is sufficiently grave, for it indicates a distinct departure from the block telegraph regulations without any excuse to palliate it. Had the Victoria train not been allowed to enter the Islip Street section without signalman King's permission or knowledge, the disaster would not have occurred.

It is with much regret that I have to attribute the blame to men of such excellent character as signalmen Crossley and Berry. It is not possible for me to apportion definitely the culpability between the two men, but the chief responsibility must rest on Crossley, who has been in charge of the Kentish Town cabin for 21½ years, out of a total service of 23 years. He had been on duty 3 hours 57 minutes at the time of the collision. Berry, who was working under Crossley's orders, has ten years' experience as signalman out of 11 years' total service, and he had been on duty 2 hours 57 minutes.

How two men with such records came to make such a serious blunder must remain a matter for surprise.

Guards Barrs, Broom, and Stretten seem to have acted with commendable promptitude in protecting both lines of rails after the collision, and it was owing to the alacrity of Barrs, that the down train then due was stopped at the Islip Street cabin. The signals had been lowered for this train to approach, but Barrs ran towards the cabin and attracted the signalman's attention in time to enable him to put the home-signal to danger before the train reached it.

No blame whatever attaches to the driver of the express, who seems to have been approaching the station in a proper manner, and who could not see the train in front of him till he was close on it, owing to the smoke and steam in the tunnel at the north end of the station.

This collision calls attention once more to the weak point in the present mode of block working, viz., that part of it which depends on the obedience of signalmen. Regulations of the most careful and satisfactory nature may be drawn up, but absolute compliance with them cannot at all times be ensured. The inference is, that though vast improvements have been made in late years in train signalling, a great deal remains to be done in order to secure immunity from such errors, whether due to wilfulness or carelessness, as that described above.

It seems to me to be very desirable that train books should be kept in the signal-cabins named in this report (in accordance with the Board of Trade's Recommendation No. 7) a lad, if necessary, being employed in each cabin to assist the signalmen in recording the block telegraph-signals. And I would further suggest, for the con-

sideration of the company, whether it would not be possible to adopt on busy sections of the line some system of electrical interlocking, which would prevent a signalman from lowering his starting-signal without the permission of the man in the cabin next in advance. Had such a lock existed in the present case, the Kentish Town starting-signal could not have been lowered for either train without the knowledge and permission of the signalman at Islip Street.

I have, &c.,
H. A. YORKE,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

PARTICULARS OF DAMAGE.

Van No. 174 (leading vehicle on Bradford train).—Two soles, one headstock, one middle bearer, one longitude, two diagonals, one bottom end bar, two corner plates, two brake-trimmers, half the floor boards, parcel shelves, two corner pillars, end framing and panels, standing pillar, two roof lights, one bulge light, one door pillar and electric pipe, one top and one bottom step-board, two oil axle-boxes, two buffer-castings, one vacuum-brake main-pipe, two buffer-shoes, all broken; six step-irons, two axle-guards, two buffer-rods, one drawbar and coupling, four brake-hangers and one ascending-step bent, and also two folding door-rods and one end rail bent.

Third-class carriage 278 and bogie-composite 414 on Bradford train had each one quarter-light broken.

Third-class brake 1531 (rear vehicle of Victoria train).—Two soles, one headstock, one middle-bearer, two diagonals, two longitudes, one bottom side end bar, four step-boards, one step-iron, two bottom sides, six quarter-lights, four door-lights, cornice-moulding, nine roof-boards, three hoop-sticks, two corner-pillars, three standing-pillars, two casing-boards, all broken; one end of body and guard's compartment completely smashed; automatic vacuum main and hose pipes and brake-guage and stand-pipe broken; two oil axle-boxes and one axle-guard and bridle and two buffer-castings broken; two spring-bangers, one axle-guard, all body brackets and step-irons, two buffer-rods, and one drawbar bent; all brake-gear bent and broken; one journal damaged.

Third-class carriage 368.—One headstock, one automatic vacuum hose-pipe and one quarter-light broken; one cornice and one roof-board damaged.

First-class carriage 298.—One quarter-light and one door-light broken, badly shifted.

First-class carriage 296.—One door-light broken, badly shifted.

Third-class brake 1530.—One door light broken, badly shifted.

First-class carriage 299.—One headstock, one end bottom side moulding broken; one headstock damaged, badly shifted.

First-class carriage 297.—Two headstocks and bottom side moulding broken; one roof-board damaged, badly shifted.

Third-class carriage 759.—Two headstocks broken, badly shifted.

Third-class brake 1532.—Brake stand-pipe, two headstocks and one quarter-light broken; badly shifted.

Engine 145 of Bradford train.—Engine foot-plate (front end) damaged; engine and tender buffer-rams bent; engine and tender life-guards damaged; three C.I. brake-blocks broken; trailing cross-stay bent; vacuum stand-pipe and hose-pipe damaged; copper vacuum exhaust-pipe broken; two head-lamps damaged, and one lamp-iron broken; paint damaged.

Printed copies of the above Report were sent to the Company on the 12th December.

MIDLAND RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
14th January 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 29th ultimo, the result of my enquiry into the causes of a collision which occurred on the 8th ultimo at Watling Street signal-cabin, near Child's Hill, on the Midland Railway.

In this case an up goods train, consisting of engine and tender, 24 loaded goods waggons and brake-van, which left Peterborough at 8 p.m. on the 7th ultimo, over-ran the up goods line home-signal at Watling Street signal-cabin at 2.55 a.m. on the 8th ultimo, and came into violent collision with a tank-engine and brake-van, which were standing on the up goods line about 50 yards south of the home-signal, driving them forward on to the brake-van of the 6.30 p.m. up express goods train from Burton (consisting of engine and tender, 33 goods waggons and brake-van), which in its turn was driven forward into collision with the brake-van of the 11.40 p.m. up goods train from Bedford (consisting or engine and tender, 31 goods waggons and

brake-van), which train was standing at the up goods line home-signals at West End north signal-cabin, waiting for the signal to be lowered for it to enter the West End sorting-sidings.

The brake-van attached to the rear of the tank-engine was broken to pieces, and nine of the waggons in the Peterborough train left the rails, six of them being overturned, and four being thrown foul of the down passenger line; but no vehicle in the Burton train or the Bedford train left the rails.

The driver of the tank-engine was very badly shaken, and the guard who was in the broken-up brake-van, was seriously injured, neither of these men being in a fit state to give their evidence until the 10th instant, and both being still under treatment.

A cattle-drover, who was a passenger in the brake-van of the Bedford train, was also injured.

The tank-engine (No. 1989), the engine of the Peterborough train (No. 1715), the engine of the Burton train (No. 1435), 10 of the waggons in the Peterborough train, and eight in the Burton train were damaged, but there was no damage to the Bedford train. (For full return of damages, *see* Appendix.) In the permanent-way 21 chairs were broken and 27 sleepers were damaged.

Description.

At Watling Street, which is a new signal-cabin, opened on the 6th November 1892, there are five lines of rails in the following order from the west or down side, viz.: second down goods line (extending from Watling Street to Child's Hill junction), down goods line, up goods line, down passenger line, and up passenger line.

There are no passenger line signals at this cabin, which is for working the goods lines only, and the only signals to which it is necessary to refer are the up goods line home-signal, which is on the west side of the railway, 43 yards north of the cabin, the up goods line distant-signal which is 735 yards north of the cabin, and the up passenger line distant-signal worked from West End south cabin, which is on the east side of the railway, 57 yards south of Watling Street cabin.

The nearest signal-cabin northwards, distant 1,046 yards, is Child's Hill junction cabin, which is also a new cabin, opened on the 4th December 1892, and from which are worked the signals both for the passenger and the goods lines; and the nearest signal-cabin southwards, distant 529 yards, is West End north cabin, which is a goods line cabin only. On the passenger lines the block-section extends from Child's Hill junction cabin to West End south cabin, a distance of 2,120 yards, and on the goods lines the working is by means of a bell code from Child's Hill junction to Watling Street, and from Watling Street to West End north, block working being still in force on the goods lines north of Child's Hill junction, and south of West-End north.

From Scratchwood junction, north of Mill Hill station, to Brent south junction, between Welsh Harp and Child's Hill stations, there are four lines all used as passenger lines, but south of this point two of the lines are passenger lines and two are goods lines.

Up to the 5th December 1892 there was block-working throughout on both passenger and goods lines, but upon that date, in order to meet the exigencies of the goods and mineral traffic into the extensive new sidings on the west side of the line, it was found necessary to alter the mode of working the goods lines, as between Child's Hill junction and West End north, and the following was the notice previously issued to drivers and others concerned:—

Between Child's Hill and West End.

A new down goods line alongside the old down goods line between the Four Arch Bridge and Child's Hill passenger junction has been brought into use, and named "second down goods line."

At 12 noon on Monday next, December 5th, block telegraph working on the up goods line from Child's Hill passenger junction to West End north junction, on the down goods line from West End north junction to Watling Street, and on the first down goods line from Watling Street to Child's Hill passenger junction will be discontinued, and from the time named, these lines will be worked in accordance with the general regulations for train signalling by telegraph bells.

Watling Street:—

The starting-signal for the first down goods line will be removed and dispensed with.

The second down goods line from Watling Street to Child's Hill passenger junction is not worked either in accordance with the block telegraph regulations, or the general regulations for train signalling by telegraph bells. Drivers must proceed at such a speed as to be able to stop short of any obstruction there may be upon the line.

Drivers approaching Watling Street on the down goods line must whistle three times if going to Brent direct, and four times if going into Child's Hill sidings.

Under the bell code system which was adopted the "Train on line" signal, and the "Train out of section" signal are given for all goods trains, as when block working is in force, but two or more trains are permitted to follow each other into the same section before the "Train out of section" signal for the first train has been received from the cabin in advance, each train in such case being stopped and cautioned.

The "Train out of section" signal is given as soon as the last vehicle of a train, with tail-lamp attached, has passed a signal-cabin, and the next following train is then simply belled on and allowed to proceed without being stopped and cautioned.

Between Child's Hill junction and Watling Street the line is upon very easy curves and upon the following gradients, viz., rising one in 196 for 275 yards, falling 1 in 375 for 375 yards, and level for the last 400 yards.

The tail-lamps of a train standing at the point of collision, that is about 7 yards south of Watling Street cabin, and 50 yards south of the goods line up home-signal, can be plainly seen for over 300 yards, and the light of the home-signal can be seen for over 800 yards.

There have recently been considerable alterations at Child's Hill junction, the new cabin taking the place of an old one, and Watling Street cabin and signals having been added.

Evidence.

John Cooke, signalman, in the service 18 years, said: I have been a signalman 16 years, two years at the Child's Hill goods junction, south of Child's Hill station, and I was removed to Watling Street when the Child's Hill goods junction signal-box was closed, and the Watling Street signal-box was opened on November 6th, 1892. On December 7th I came on duty at 8 p.m. to remain till 6 a.m. on the 8th. I left duty on the 7th at 6 a.m. after 10 hours duty. At 2.33 a.m. I lowered my up home-signal, and gave the driver with an engine and brake a green hand-signal to draw to the south side of my signal-box. He did so, and I put the signal to danger behind him, and gave the train out of section-signal to Child's Hill junction. At 2.52 I received the "Train entering section" signal from Child's Hill passenger junction for the Peterboro' train worked by engine No. 1715, and at 2.55 this train came into collision with the brake that was standing upon the up goods line a short distance south of my signal-box, the distant and home signals for the up goods line being both at danger. Shortly after receiving the "Train entering section" signal for the Peterboro' train I put some coal on the fire, and looking towards Child's Hill station, I saw a train approaching a short distance south of that station. I noticed that there was a white light at the foot of the chimney, and a blue light over the right-hand buffer. These lights corresponded with the bell signal I had received. In consequence of the line ahead being obstructed, I sat down, and did not take any further notice until I heard a train approaching, which I supposed was on the up passenger line, but on looking towards that line to see what was passing, I discovered it was a train on the up goods line, and before I had time to show a danger signal with my hand lamp, the collision took place. The train was running at considerable speed. I cannot estimate the speed, but it was much faster than I could walk. I am quite sure that the brake-van which was struck was on the West End side of my cabin, quite 12 yards past the cabin, I should say. The tail light and two side lights were all burning brightly, all being on the level of the side lights. When the cabin was opened in the beginning of November, the line was at first worked under the block system; but this was changed at midday on the 5th December to bell code, working for the sections from Child's Hill to Watling Street, and from Watling Street to West End north box. The down main line was fouled after the collision by part of the Peterboro' train. The brake-van attached to the engine from Child's Hill was broken to pieces. I do not work any signals for the main line, but I telephoned at once to West End south box to block the line. All trains are booked in my cabin. We book the "Train entering section" signal, the time of arrival, and the time we give the "Train out of section" signal, which is not given until the section is clear.

William Thorne, signalman, said: I have been 22 years in the service, and a signalman 20 years; 17½ years at Child's Hill passenger junction. On December 7th I came on duty at 10 p.m. to remain until 6 a.m. on the 8th. I went off duty at 6 a.m. on the 7th, after eight hours duty. At 2.52 the Peterborough goods train passed my post. My distant-signal was at danger when the train passed it, and my home-signal was lowered shortly after it had done so. The train passed my junction at about the usual speed for a train of this class when the line is clear to Watling Street. The Peterborough goods train usually runs past my cabin on the up passenger line, but on the morning in question a fish train was running in the rear of the goods train, and there is no doubt that the signalman at Welsh Harp junction turned the goods train on to the up goods line to allow the fish train to pass on the up passenger line. I have the fish train recorded as passing my junction at 2.53 and the goods at 2.52. I do not remember, exactly, in what position the two trains would be near my junction, but they would not be far apart. Until December 5th block telegraph working had been in operation on the up and down goods lines between Child's Hill passenger junction and Watling Street. On that date block telegraph working was discontinued on those lines, trains being worked in accordance with the general regulations for signalling by telegraph bells. At the time of the collision I had not any down train signalled to me. There was no booked train due or nearly due.

Alfred Hyde, engine-driver, said: I have been in the service about 15 years, and a driver three years, and I have been stationed at Bedford all the time. I have been accustomed to work in the neighbourhood of London as driver and fireman for about 12 years. On December 7th I came on duty at 10.40 p.m. to work the 11.40 p.m. goods train from Bedford to St. Pancras. I went off duty at 1 p.m. the same day after 14 hours 20 minutes duty. On approaching Child's Hill on the up goods line the signals were at danger, and I brought my train to a stand at the home-signal The signalman then lowered the signal and gave me a green light with his hand-lamp for us to proceed cautiously, and I did so. I believe there was a train on the goods line between Child's Hill and Watling Street, but of this I am not certain. The trains moved ahead, and at the time the collision took place my engine was near to the West End north junction up home-signals. I heard buffers closing up very rapidly, and directly afterwards the collision occurred. My train, which consisted of engine, tender, and 31 loaded waggons of goods with a guard's brake in the rear, was forced ahead about the length of eight waggons by the collision. I was on the footplate at the time, and was not injured. No part of my train left the rails. I was standing still when the collision took place. There was another goods train just in front of me which had just entered the West End sidings. I was myself waiting for the signal to be lowered for me to enter the sidings. The line is a goods line only, and I am quite aware that it is not worked under the block system. I do not know that there is any restriction of speed upon it, but drivers use their own judgment. It was a clear night. On the 6th December I had come on duty at 10.40 p.m., my duty being to take a through goods to London, due at 2.5 a.m. at St. Pancras, and to bring back an engine and brake to Harpenden, starting at 3 a.m., and due at Harpenden at 4.8, to shunt the yard at Harpenden, and the same at Harlington, and then to go back to Bedford, having taken waggons from Harpenden and Harlington. I was due at Bedford at 7.23 a.m., but did not arrive until about midday. We were shunting two hours at Harpenden and one hour at Harlington, and were delayed a good deal by signals on the road. I work this train one week in about nine weeks. We never get back at 7.23 a.m., and it is not usual to get back before 11 a.m.

Jesse Urin, fireman, said: I have been in the service about two years; have been a fireman about one year, and am stationed at Bedford. On 7th December I came on duty at 10.40 p.m. to act as fireman with driver Hyde. I signed off duty the same day at 1 p.m. I have heard the statement made by driver Hyde. It is correct—I was on the foot-plate at the time. I am unable to give any further information respecting the collision. I have been working for about six weeks with driver Hyde.

Robert Munday, goods guard, 24 years in the service, said: I have been a goods guard 22 years, and accustomed to work in the neighbourhood of London all the time. On 7th December I came on duty at 11.10 p.m., to work the 11.40 p.m. goods train from Bedford to London, and the 3 a.m. train from London to Bedford, due to arrive at Bedford at 7.23 a.m. I left duty at 1.30 p.m. on the 7th, having come on duty at 11.10 p.m. on the 6th. On arriving at West End north junction my train consisted of engine, tender, and 31 waggons, with guard's brake in the rear, in which I was travelling. The waggon next to the engine was loaded with cattle, and the drover was travelling with me in my van. During the time we were standing on the up goods line the drover was lying down on one of the seats, and I was sitting on the locker opposite to him when I heard a rattling of buffers, and it occurred to me that something was amiss on the passenger line. I looked out of the brake, and noticed the engine of the Burton train, which was standing about half a waggon's length from my brake-van, move ahead. At the same moment the Burton engine came in contact with my van. The head of the drover was forced against the cross piece of wood at the end of the locker, and he complained of injury to his head. I examined him, and could not find anything amiss, but when we reached the cattle docks at Kentish Town sometime afterwards he complained that his head ached, and said that a swelling had been caused. None of the vehicles on my train left the rails, and no damage was done. I think my brake was forced ahead about the length of seven or eight waggons. The drover had a proper ticket for travelling in my brake. The cattle came from Bedford. I work this train in my turn, usually for a week at a time. At this time of year this train is very seldom back at Bedford before 11 a.m., or later. On one occasion this winter it was not back until 2.20 p.m.

John Heath, engine driver, in the service 24 years, said: I have been a driver about 15 years and have been accustomed to work in the neighbourhood of London about nine years. On December 7th I came on duty at 5.30 p.m. to work the 6.30 p.m. express goods train from Burton to London, and should, under ordinary circumstances, have signed off duty at Kentish Town between 4 and 5 a.m. I last left duty on December 4th at 5.25 p.m. after working a goods train from London to Burton. I ran on the up passenger line from Scratch Wood junction to Welsh Harp, and was then turned on to the up goods line. The signals for the up goods line at Child's Hill passenger junction were at danger, and I brought my engine to a stand near to the home-signal. After standing possibly a minute the signal was lowered, and the signalman showed me a green light with his hand-lamp. I proceeded slowly and found a goods train from Bedford standing on the up goods line at the Watling Street home-signal. After bringing my train to a stand at the rear of the Bedford train, the Watling Street home-signal was lowered, and the Bedford train proceeded. I then drew my train down to the Watling Street home-signal which had been put to danger, and was shortly afterwards lowered, and I followed the Bedford train towards West End, and stood with my engine near to the guard's brake of the Bedford train. During the time my train was standing in this position my fireman was breaking coal on the tender, and I was upon the footplate. I heard a crash, and directly afterwards my train was driven forward possibly the length of four or five waggons. Neither myself nor my fireman received any injuries. It was a clear night. The line we were on is a goods line only. I know quite well that it is worked by a bell code and not under the block system. It had been worked on the block system until shortly before the accident. I think the change was made on the 4th December. At or before the time the change was made I received a notice of it. It was in the usual weekly notice of which all drivers are supposed to receive a copy.

William Henry Wood, fireman, four years in the service, and fireman about 2½ years, said: I have been running in the neighbourhood of London about three months, and on December 7th I came on duty at 5.30 p.m. after 72 hours off duty, to act as fireman with driver Heath. I believe I worked with Heath on the previous trip and went off duty with him on December 4th. I have heard the statement made by driver Heath. It is correct, and I have nothing to add, except that personally I did not know how the line was worked.

Harry Tomlins, goods guard, 17 years in the service, said: I have been a goods guard and foreman about 12 years, and have been accustomed to work in the neighbourhood of London two years. On December 7th I came on duty at 5.50 p.m. to work

the 6.30 p.m. goods train from Burton to London, being due at 12.45. On December 7th I went off duty at Burton at 2.45 a.m. after 10¼ hours duty. I do not know the exact time that my train was brought to a stand at the Watling Street home-signal, but I booked the time as arriving on the West End side of Watling Street as 2.30. My train consisted of engine, tender, and 33 waggons, with a guard's brake in the rear, in which I was travelling. After my train had stood some minutes on the West End side of the Watling Street signal-box, an engine and brake came in the rear and stood very close to my brake, and some little time afterwards, when I was making out my journal, the collision, of which I had had no previous warning, took place. I was knocked down in my van, but was not injured. My van was driven forward, perhaps the length of five or six waggons, and as soon as I could do so, I left my van, and found that the guard with the engine and brake was injured. He was being attended to, and I ran forward to the signal-box, and asked the signalman whether he had taken steps to protect the down passenger line, which was fouled by the collision, and he informed me that he had. None of the vehicles on my train left the rails, but some of the waggons were damaged and some ale spilt. It was a clear night.

Frederick Hutton, engine driver, said: I have been in the service 26 years, have been a driver 18 years, and have been accustomed to work trains in the neighbourhood of London all the time. On December 8th, I came on duty at Child's Hill engine shed at 1.20 a.m., to work the 2.20 a.m. goods train from West End to Poplar, and to work as required afterwards. I left duty on the morning of December 7th at about 5.20 o'clock, after 13½ hours duty. I left Brent sidings with the engine and brake for West End on the up goods line, and came to a stand south of the Watling Street signal-box in consequence of there being other trains in front. I was standing on the foot-plate looking northwards, when I saw the head-lights of a train approaching on the up goods line. I at once called out to my mate "Look out!" but had not time to jump off the engine before the collision took place. I was knocked off the engine on to the ballast. Shortly afterwards my mate lifted me up, and I was taken home. I am still unable to resume duty. My engine was a six-wheel coupled tank-engine, running chimney first. When the collision took place, the foot-plate of my engine was about 15 yards on the West End side of Watling Street signal-box. I should say the trailing end of the brake would have been about opposite to the West End end of Watling Street cabin. The Watling Street up home-signal for the goods line was at danger at the time. It had been dropped for me, and was then put to danger again. I had been standing about 15 minutes or so behind the Burton train before the collision took place. The line is not now worked under the block system. It was always worked under the block system until shortly before the accident. I received due notice of the change in the weekly notice, and I was quite aware of the manner in which it was worked. When I saw the head-lights of the engine behind me, on the goods line, I was alarmed and called out, because I saw it was running too fast to stop. It was a clear night.

George Wood, fireman, in the service four years, a fireman about 1½ years, and accustomed to work in the neighbourhood of London, said: On December 8th I came on duty with driver Hutton to act as his fireman. I signed off duty with him at about 5.20 a.m. the previous day. I have heard the statement made by driver Hutton. It is correct. When the collision took place I was knocked down on the foot-plate and was slightly shaken. On regaining my feet I looked round and saw my mate lying on the ballast. I went to his assistance, and he was ultimately taken home. I know the two side-lights on our brake-van were burning, but I cannot speak as to the tail-light.

Charles Thompson, goods guard, 23 years in the service, said: I have been a goods guard 22 years, and accustomed to work in the neighbourhood of London all the time. On December 8th I came on duty at Brent sidings at 1.45 a.m. to work the 2.20 a.m. goods train from West End to Poplar, and other trips in the neighbourhood of London as required. Under ordinary circumstances I should have finished work on this turn after about 11 hours duty. I left duty on December 7th at 1.45 p.m., after being on duty 12 hours. I left Brent sidings with an engine and brake at 1.55, and was brought to a stand on the up goods line at the Watling Street signal-box at 2.30 in consequence of other trains being in front. My train was standing about opposite to the Watling Street signal-box, and remained so standing until the collision took place at about 2.50 or 2.55. I was standing up in my brake with one hand on the chimney and speaking to the driver who was on the engine. Just as I turned round I noticed a train approaching on the same line, and the collision immediately took place. I was rendered insensible and knew nothing further until about two days afterwards. The open end of the brake was next the engine. I heard no whistling. I got a notice of the alteration of the mode of working on this line.

Charles Upton, engine-driver; 28 years in the service, said: I have been a driver 22 years, and have been accustomed to run in the neighbourhood of London about 12 years. On December 7th I came on duty at 7 p.m. to work the 8 p.m. goods train from Peterborough to London (*viâ* Manton and Kettering), which is due to arrive at St. Pancras at 2.25 a.m. I left duty at Peterborough at 9 a.m. on the 7th, after 11½ hours duty, working the 10.40 p.m. goods train from London. My train, which consisted of engine, tender, and 24 waggons of goods, with a guards brake in the rear, ran on the up passenger line to Welsh Harp where the signals were kept at danger until my train was brought nearly to a stand, when the signal was lowered for me to run from the up passenger on to the up goods line. On approaching Child's Hill, on the up goods line, the distant-signal was at danger, but shortly after passing it the home-signal was lowered, and I passed Child's Hill at a speed of about 20 miles an hour. I did not observe the Watling Street home-signal until I was about 100 yards from it. Although I had received a printed notice respecting the opening of the Watling Street signal-box, and the discontinuance of block telegraph working on the goods line at the place, this had quite slipped my memory, and it was not until I saw the three red lights on a guard's brake in front of me, that it occurred to me that there would be anything on the line I was upon. I at once shut off steam, reversed the engine, applied the brake, and did everything in my power to stop, but was unable to do so before coming into collision with the guard's brake at a speed of perhaps 15 miles an hour. Several waggons on my train left the rails, and blocked the down passenger and down goods lines. I am aware that when the Watling Street signal-box was opened, the Child's Hill goods junction-box was closed, but the alterations which had taken place in the neighbourhood had entirely slipped my memory at the time, and when the home-signal at Child's Hill passenger junction was lowered for me to pass, it never occurred to me that there would be any obstruction on the line before reaching West End. It is an unusual thing for the train I work to run on the up goods line, and there is no doubt my train was turned on to that line on the morning the collision took place to allow a fish train to pass on the up passenger line. Since the opening of the Watling Street signal-box I have only made one journey to London. On that occasion I ran past Watling Street on the up passenger line, and returned on the down goods line. The Watling

Street up distant-signal was at danger when I passed it. The Watling Street up home-signal is a plain signal, and can be seen for a considerable distance, but I did not see it for more than 100 yards upon this occasion. The line is slightly on a curve. I saw the tail light before I saw the home-signal. I did not sound my whistle. I was so much occupied in trying to pull up my train that I omitted to do so. My engine (No. 1715) is a six-wheel coupled goods engine with six-wheeled tender. It was fitted with a steam brake working blocks on all the engine and tender wheels. It was in good order, and acted well when I applied it.

William Ferritt Dyson, fireman; four years in the service, and a fireman nearly 2½ years, said: On December 7th I signed on duty at 7 p.m. to work with driver Upton with the 8 p.m. train from Peterborough to London. I signed off duty on December 7th about 9 a.m., after working the 10.40 p.m. goods train from London, *viâ* Manton. On the morning of December 8th I was making my eighth journey to London as fireman. It was my first journey on the up goods line. The seven previous journeys down from London I had made on the down goods line, one of those journeys on the night of December 6th. I thought my train was on the up passenger line until I saw the brake lights of the guard's brake, they being in the goods line position, and, as I could see that they were on the same line that my train was upon, I then realised that we were on the up goods line. The signals for the up passenger line were off, and I thought they were off for my train, but just about the time that I sighted the three red lights ahead a fish train passed on the up passenger line, and the signals that I thought were off for my train were evidently off for the fish train. I did not notice the Watling Street up goods line home or distant signals, or the West End up goods line distant-signal, my attention being on the up passenger line distant-signal. I did not notice that our train was turned on to the up goods line from the up passenger line at Welsh Harp.

John Bird, goods guard, 35 years in the service said: I have been a goods guard 32 years, and accustomed to run to London about 12 years. On December 7th I came on duty at Peterborough at 7.30 to work the 8 p.m. goods train from Peterborough to London. I left duty at 8.55 a.m. on the 7th after working the 10.40 p.m. train from London to Peterborough. My train ran on the up passenger line to Welsh Harp, and after the speed had been reduced it was turned on to the up goods line. I noticed the signals at Brent south junction were lowered, and, on approaching Child's Hill passenger junction, the home-signal was taken off for us to proceed. I then looked out at the back of my brake, and saw a train approaching on the up passenger line. My attention was fixed on that train until it passed us near the Child's Hill station. I did not notice anything further until my train came to a sudden stop. There were 24 loaded waggons, and a brake van, in my train. At the time of the collision my brake was not on. I knew that block-working had been suspended. Eight of the waggons in my train were thrown off the rails. I think four were foul of the down main line. I think our speed was between 18 and 20 miles an hour.

Conclusion.

There is no dispute whatever as to the circumstances under which this collision occurred, the facts being, briefly, as follows:—

At 2.33 a.m an engine, with brake-van attached behind it, which had been brought to a stand at Watling Street up goods line home-signal, was brought within that signal, which was then restored to danger, and stood for about 22 minutes, a few yards south of the signal-cabin, close behind the brake-van of an up goods train from Burton, the engine of which train was standing about half a waggon's length behind the brake-van of another up goods train from Bedford the engine of which again was standing at the up goods line home-signals at West End north cabin, the whole of the up goods line between Watling Street cabin and West End north home-signals being thus occupied by standing trains. The "Train out of section" signal for the tank-engine and brake-van had been given back to Child's Hill passenger junction cabin at 2.33 a.m., so that, when an up goods train from Peterborough was signalled to the signalman in that cabin at about 2.50 a.m., this man was quite justified in lowering his up goods line home and distant signals for the train, which passed at about 2.52 a.m., running at about 20 miles an hour.

The Watling Street up goods line distant and home signals were at danger, but the driver of the Peterborough goods train disregarded the former, and did not see the latter until he was within 100 yards of it, and within 150 yards of the brake-van attached to the tank-engine, the tail-lights on which he saw just before he saw the home-signal light. It was then impossible for him to stop, although he seems to have done his best, and he struck the brake-van at about 2.55 a.m., when he was still running at considerable speed, probably at nearly 15 miles an hour. The brake-van was broken to pieces, and it is wonderful how the guard who was in it escaped with his life, but he was badly injured, and the violence of the collision is shown by the fact that a drover, who was riding in the brake-van of the Bedford goods train, was injured by the other trains being driven forward, although he was actually nearly 250 yards ahead of the point of collision, and the shock was transmitted to him through the engine and brake, and the whole length of another goods train.

It is quite clear that the collision was due to the non-observance of signals by the driver of the Peterborough train, Charles Upton, who had at the time been on

duty for about eight hours, and who is stated to be a man of excellent character, and a good steady driver,

This is the first occasion on which he has brought a train to London on the up goods line since the alterations which have taken place in the signalling arrangements and mode of working at Child's Hill and Watling Street, the only previous trip he has made since that time having been on the up passenger line, but he had received proper notices, both of the signalling arrangements, and of the suspension of block working between Child's Hill junction and West End north signal cabin, and it is difficult to understand how, upon a perfectly clear night, a driver of his class could have so forgotten himself as to run past two plain signals at danger, and into collision with a train the tail lights of which were visible for a great distance.

The easiest way to account for it would be by supposing that he was in the same position as his fireman, who thought that they were upon the passenger line, the usual line for them to run upon, and the signals for which were right for running on to West End south cabin, and that he had not noticed having been turned on to the up goods line at Welsh Harp, but he does not make any such excuse himself, and says that he had entirely forgotten that any changes whatever had been made. Under the old arrangements, as soon as a train passed Child's Hill goods junction (a cabin now removed) it would have a clear run on the up goods line to West End north cabin, there being no intermediate signals at Watling Street, as at present.

The section of line between Child's Hill junction and Watling Street was actually clear for him, but, upon a line worked on the block system, with a train standing only 50 yards inside the home-signal, as the engine and brake were upon this occasion, a following train would have, at any rate, to be cautioned, even if it were allowed to come on at all.

It is not incumbent upon railway companies to work their goods lines on the block system, although it is most desirable, having regard to the safety of parallel passenger lines, and of the men working on the goods line, that they should be so worked wherever it is possible to do so.

The goods lines of the Midland Railway Company in the neighbourhood of London have, until recently, been worked on the block system throughout, but I am not prepared to question the necessity for the decision arrived at by the Company to adopt station yard working upon the sections between Child's Hill junction and West End north cabin, for since the opening of the extensive sorting sidings at West End and Brent it is impossible, I am told, to get the traffic through in any other way. The lines are well signalled, and every proper precaution seems to have been taken to give notice of the alterations in working to all concerned.

I must call attention, however, to the hours of work of the men with the Bedford goods train, and, inasmuch as it appears that at this season of the year, owing to the delays in working, the train due back at Bedford at 7.23 a.m., is rarely back before 11 a.m., and has been as late as 2.20 p.m., it seems clear that some alteration is required in the timing of the train, if the hours of the men working it are to be kept within proper limits.

Upon the day before this collision the driver and fireman of the train had been on duty for 14 hours and 20 minutes, and the guard for about the same time, and that this is nothing unusual is clearly shown by the evidence.

The following is the record of the actual hours worked by these two men on the 5th, 6th, 7th, and 8th December, viz. :—

	Date.	Booked Time.	Actual Time.
		H. M.	H. M.
Driver Hyde	5th December	11 45	15 25
	6th „	8 58	14 20
	7th „	8 58	16 10
	8th „	8 58	15 50
Fireman Urin	5th „	Off duty	
	6th „	8 58	14 20
	7th „	8 58	16 10
	8th „	8 58	15 50

giving an average of 15 hours 26 minutes for four days for the driver, and for three days for the fireman, which hours are most excessive.

The guard working with these men has hours only slightly less in number; and it also appears from the evidence that driver Frederick Hutton worked for 13½ hours on the 7th December.

I have, &c.,
F. A. MARINDIN,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

DAMAGE to ENGINES.

Engine No. 1715.—Smoke-box crushed; buffers and buffer-plank broken; ball-plate damaged; brake-rods, &c. bent; cylinder-taps and exhaust-gearing damaged; one Furness lubricator lost; lamp-irons and exhaust-cock damaged.

Engine No. 1435.—Trailing-buffer ram heads bent; tender brake steam-pipe bent; trailing buffer-case split; angle-iron round tube-plate (smoke-box end) started leaking.

Engine No. 1989.—Had the back of coal-bunker crushed in.

DAMAGE to WAGGONS and BRAKE-VAN.

2.20 a.m. *ex* West End Midland goods brake No. 356.—Completely smashed up.

6.30 p.m. goods *ex* Burton Midland waggon No. 69,416, loaded.—One axle-box lug broken; one buffer-casting broken.

Midland covered goods No. 7,614, loaded.—Six end-boards three quarter-boards, and one slide door-stile broken.

Midland covered goods No. 853, loaded.—Eight end-boards, and one slide door-stile broken.

London and South Western Railway covered goods No. 1392, loaded.—One buffer-cylinder and packing, eight end-boards, and two end-pillars broken, and body shifted.

North Stafford waggon No. 972, loaded.—One head-stock and two buffer-castings broken; two buffer-rods and two corner-plates bent.

Great Eastern cattle waggon No. 12,121, loaded.—One axle-guard and one door both strained; one axle-guard bridle and one folding-door, top rail both broken.

Great Eastern Railway waggon No. 3,663, loaded.—Two axle-guards and one bridle broken; one bearing-spring shifted.

Midland cattle waggon No. 27,977, loaded.—Top body tie-rod broken.

8 p.m. *ex* Peterboro' Midland waggon No. 79,903, loaded.—(Overturned,) seven end-planks, one head-stock, three end-pillars, two axle-boxes, four journal-collars, and one coupling broken; four corner-plates, four axle-guards, and one buffer-rod bent; body strained.

Midland waggon No. 113,564, loaded.—(Overturned), one head-stock, three end-planks, one quarter-plank, and two spring-shoes, all broken; one head-stock, one end-pillar, one sole, and one diagonal, all damaged; four axle-guards and two buffer-rods bent, and body strained.

Midland waggon No. 861,187, loaded.—(Overturned,) two soles, one head stock, one buffer-casting, 10 end-planks, four end pillars, five quarter-planks, two corner-plates, one buffer-rod, one side-rail, and one coupling, all broken; five quarter-planks damaged; one middle-bearer bruised; two corner-plates, three buffer-rods, four axle-guards, and the brake-work bent.

Midland waggon No. 41,549, loaded.—(Overturned,) two soles, two head-stocks, two diagonals, one middle-bearer, four end-pillars, five end-planks, one quarter-plank, one side rail, two spring-shoes, two axle-boxes, one corner-plate, and two axle-guards, all broken; two axle-guards, one corner-plate, three buffer-rods, and two couplings, all bent.

Midland waggon, No. 55,411, loaded.—(Overturned,) two soles, one head-stock, 10 end-planks, one side-door, one under-door, one middle-bearer, two buffer-rods, one side-rail, three end-pillars, three axle-boxes, and two spring-shoes, all broken; one head-stock damaged; four axle-guards, four corner-plates, two buffer-rods, one draw-bar, and brake-work, all bent.

Midland waggon No. 53,853, loaded.—(Overturned), one sole, two head-stocks, one middle-bearer, seven quarter-planks, two end-pillars, one buffer rod, one buffer-casting, three spring-shoes, two buffer-shoes, one coupling, one side-rail, and one axle-box, all broken; one sole damaged; four axle-guards, three buffer-rods, and brakework bent.

Midland waggon No. 74,838, loaded.—(Tipped on end), one sole, two head-stocks, one middle-bearer, one side-rail, six end-planks, one end-pillar, one quarter-plank, two corner-plates, two buffer-casting and one spring-shoe, all broken.

Midland waggon No. 34,457, loaded.—(Off rails all wheels,) two soles, two head-stocks, four buffer-castings, eight side-planks, four end-planks, two buffer-rods, and one brake hanger, all broken; two buffer-rods, four axle-guards, one draw bar, and brake-work bent.

Midland waggon No. 92,556, loaded.—(Off rails, all wheels,) one pair of wheels damaged; one sole, one head-stock, two buffer-castings, five end-planks, two end-pillars, and top capping, all broken; one headstock bruised.

Midland waggon No. 63,020, loaded.—One head-stock, one buffer-rod, one buffer-shoe, and one angle-plate, all broken; one buffer-rod bent.

11.40 p.m. *ex* Bedford.—No damage was done to vehicles on this train.

Printed copies of the above Report were sent to the Company on the 4th February.

NORTH BRITISH RAILWAY.

Board of Trade, (Railway Department.)
8, Richmond Terrace, Whitehall, London, S.W.,
August 23, 1892.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 17th instant, the result of my enquiry into the circumstances attending a collision which occurred on the 6th instant at Kilsyth old station, on the North British Railway.

In this case, the 9.25 p.m. down train from Queen Street (high level) station, Glasgow, due at Kilsyth at 10.5 p.m., arrived at 10.27 p.m., and, having been emptied, was pushed out from the platform line on to the goods line, so that the engine might run round to the other end of the train, and turn, in readiness to take the same train of seven carriages and two brake-vans back to Glasgow, for which place it was due to start at 10.25 p.m.

The carriages were fly-shunted back, and came into collision with the buffer-stop at the end of the platform line, four passengers out of a number who had got into the train before it was pushed out from the platform, being injured slightly.

Seven of the carriages were damaged (for particulars, see Appendix) but there was no damage to the permanent-way.

Description.

Kilsyth old station was the terminus of the Kelvin Valley single line, but, since this line has been continued to Bonnybridge, leaving the old line a little west of the old station, and a new station built at Kilsyth about a quarter of a mile from the old one, the latter has not been so much used, and there are now only three passenger trains per diem running into the station from Glasgow, and the same number back again.

There is only one platform and one platform line, but there is a goods line into the goods yard on the north side of the passenger station, leaving the passenger line about 540 yards from the buffer-stop, and there is a cross-over road between the goods line and the passenger line, about half-way between the loop points and the buffer-stop. The cross-over road points on the passenger line are trailing-points to incoming trains, and facing-points to outgoing trains.

The line runs from west to east, and the signal-box is on the north side of the line, 150 yards inside the loop-points.

There is no way for an engine which has brought in a train to get round to the other end of it, except by pushing it out on to the goods line through the cross-over road, and then going round by the goods line junction points.

There is an engine turntable west of the signal-cabin, the turntable road points being on the goods line west of the cabin.

The line falls from the signal-cabin to the buffer-stop upon a gradient of 1 in 300.

The following distances westwards from the buffer-stop should be noted, viz :—

	Yards.
To west end of platform	133
„ cross-over road points on passenger line	233
„ „ „ „ on goods line	296
„ signal-cabin	392
„ turntable road points	420
„ goods line junction	542

Evidence.

Lawrence Crombie states: I have been 29 years in the service, and a station-master over 20 years, 14 years at Kilsyth. On the 6th August I came on duty at 7.50 a.m., to remain on till the last train, due to leave at 10.25 p.m., had started. I have to act as station-master at the new station as well as at the old station. There are five down passenger and five up North British passenger trains from the new station, and three down and three up Caledonian passenger trains. There are three passenger trains each way at the old station, and three goods trains to deal with at the old station, and none at the new station. The stations are a quarter of a mile apart, and I go backwards and forwards from one to the other. My staff at the new station is one booking clerk and one porter who attends to the platform signals. At the old station there are one clerk, one goods porter, and two signalmen at the junction cabin. One of the

signalmen assists at the old station during the daytime. The junction cabin is shut from 10.30 p.m.to 5.15 a.m. On the platform at the old station with the late trains there is only the clerk to assist me. The 9.25 p.m. train from Queen Street (high level), arrived at the old station at 10.27 p.m., being due at 10.5. It was a full train, and the platform was crowded with passengers, waiting to go away with the train due to leave at 10.25 for Glasgow. In order that the engine may get round the train, it has to push the train out to the signal-cabin, and then to run round and go to the table to turn. While the engine is turning the train is allowed to run back to the platform in charge of the guard, and the engine then comes back and is coupled on. The train should be empty during these shunting operations, and usually is empty. When the train is late, as it was that night, and on a Saturday night when the platform is crowded with rather a rough class of passengers, it is very difficult to keep them out of the carriages. Upon the night in question, I did my best to keep the passengers out of the train, but some got in before it was shunted out. I cannot say how many, but not very many, about three or four I think. I myself prevented some from getting in. I was alone on the platform, as the booking clerk was still in the office. The train was pushed out, and I saw it running back in the usual way quite slowly. I thought the guard was on the van steadying the train down with the brake as usual, so that I was not alarmed. It did not pull up and it struck the buffer-stop, when running at certainly no more than three miles an hour. I went back to the buffer-stop, and then for the first time found out that the guard was not in the brake-van. The train is always allowed to run back in this manner. I did not question the guard to find out why he was not in the van. One passenger complained to me that he had got a knock on the head, but I saw no mark. The signalman comes on at 5.15 a.m. to work until 10.40 a.m. He is off duty till 2 p.m., and then comes into the yard to assist till 8 p.m. The other signalman comes on at 10.40 a.m. and works till the 10.25 passenger train leaves. They change duty week about, and neither is on duty on Sunday.

John Deuchar states: I have been in the service for 19 years and three months, and a driver for over 12 years. On the 6th August I came on duty at Cowlairs at 11.20 a.m. to work till 11.20 p.m., having been on for the same hours the day before. I worked on different branches in and out of Glasgow during the day. I had several intervals of rest, the longest being at Cowstairs, from 7.40 p.m. to 9 p.m. My engine, No. 385, is a six-wheeled engine, with the driving and trailing wheels coupled, and a four-wheeled tender. It is fitted with the Westinghouse brake. I am in the habit of working the Kilsyth branch, and bring the 9.25 p.m. train from Glasgow to Kilsyth and back every night. On the 6th August this train consisted of seven carriages, a goods van next to the engine and one passenger van at the rear of the train. The goods van was fitted with a through pipe so that the Westinghouse brake was working through the train. There is always one goods van and sometimes two on this train. The train was a little late in starting, and we lost time at Gavell taking tickets. On arrival at Kilsyth I pushed the train out as usual, so that I might run round. I did not know that there were any passengers in it. My fireman uncoupled the engine and I pushed the train back until my engine was short of the locking-bar on the cross-over road points, and then I let the train run away from me through the cross-over road. I then went away along the main line to the loop points and backed on to the other end of the train, which was near the signal-cabin. I stood there until the signalman gave me a signal to set back through the crossing. When the signalman gave the signal I started the train back, and then backed into the turntable road, leaving the train under charge of the guard as usual. The goods van is usually pushed backed by hand into the goods yard, while I am running round the train. I thought that the guard was in his van when I kicked the train back. I got no signal from him, and it is not usual for me to get one. I got a hand lamp signal from the cabin as usual. When starting a passenger train from a platform I have to wait for a signal from my guard, but in shunting operations I take the signal from whoever is in charge. I knew nothing about the collision until after I had come back from the turntable. I took the whole train back to Glasgow. My fireman assisted the guard to push back the goods van into the yard. The fireman was not on the engine when I kicked the train back. He rejoined the engine just as I was on the points of the turntable road. It is not the usual thing for the fireman to go to assist the guard, except when the guard is not well acquainted with the place. At Cowlairs that night the guard told me that he was not very well acquainted with the shunting at Kilsyth, so I told the fireman, after he had uncoupled the engine, to go and assist him.

Robert Stirling states: I have been four years in the service, and a fireman for three years. On the 6th August I was working with driver Deuchar all the day, and had been with him on the previous day. After we arrived at Kilsyth I uncoupled the engine. The driver told me then to go and assist the guard. I went away and got into the brake-van, next to the carrier's van, with the guard. The driver pushed the train back, and after the train was through the cross-over road, I stopped it with the hand-brake. The guard and I then got out and uncoupled the carrier's van, and then pushed it into the goods yard clear of the main line. After it was clear I said to the guard, "I will go to the signal-cabin and tell the "signalman he can shift the points, as the van is "clear of the crossing." I left the guard close to the carrier's van. He would then be about 30 yards from the brake-van of the train. When I left the guard the engine was close on to the other end of the train. I went back to the signal-box and told the signalman that the van was clear. He was at the foot of the stairs coming to assist with the van. When I called to the signalman I was three or four yards from him, and could see him. He was coming down the stairs. He went up and shifted the points, and signalled to the driver to set back. The driver knocked the train back. I re-joined the engine before it got to the turntable. When I was speaking to the signalman the driver was 40 or 50 yards from me. When I left the guard I said no more to him than that I would go to the signal-cabin. I understood that he knew that he had to brake the train back. I was in a hurry to get back to my engine. I did not ask the guard if he knew what he had to do before I left him. I have assisted other strange guards in the same way, and have always left them when I have pushed the goods van back.

James McLaren states: I have been about 12 years in the service, and a guard for about six months. On the 6th August I came on duty at about 12.5 p.m. to work till 11.5 p.m. I had left duty at 6.45 p.m. the previous day. I was working during the day to Grangemouth and back. I had on the previous night been detailed to act as guard of the 9.25 p.m. train from Queen Street (high level) to Kilsyth on the 6th instant. I had never acted as guard to Kilsyth old station before, although I had as assistant guard to Kilsyth new station. The train was made up as follows:— Engine and tender, goods-van, brake-van, two third-class, two first-class, one composite, two third-class, and rear van, in which I was riding. At Cowlairs I told the driver that I was not well up in the shunting at Kilsyth, and he said he would send his fireman to help me. I knew that the goods van had to be left at Kilsyth, but I did not know the manner in which it was to be shunted, and I had a very hazy idea as to how the engine was got round the train. We started

at 9.35, and left Gavell at 10.22, 22 minutes late. On arrival at Kilsyth the train was emptied, and the engine was uncoupled. I came and got into the front van. The fireman came to me and the train was pushed out by the engine. The fireman pulled the train up by use of the brake as soon as it was through the cross-over road. We got out, uncoupled the goods van, and pushed it back into the yard. When it was clear of the points the fireman left me. He told me to mind that the van was clear of the crossing before I left it. I cannot remember his saying anything else. When he left me the van was not clear of the crossing, and was still moving back. I did not hear him say anything about going to the signal-box. I went back some way along the siding with the van, and stopped it by use of the brake. I went nearly to the end of the siding. I was not aware that I had to go to my train to brake it down to the platform. I did not know exactly how it was going to be set back to the platform. I saw it going back by itself, and strike the buffer-stop, when running at a speed of three or four miles an hour. It rebounded for two or three yards, and I got on to the footboard of the rear carriage and applied the Westinghouse brake. We left Kilsyth for Glasgow at 10.46, 21 minutes late. We were not delayed by the accident. I knew there were some passengers in the train when it was being shunted. I think the train was nearly half full. I did not see the station-master preventing people from getting in. I did not do so myself, as I was shifting my side lamps. The platform was very much crowded, and it was difficult to see what anyone was doing. One passenger only complained to me of injury. I stopped the van nearly opposite to the goods shed, and when I saw the train going back the centre of the train was opposite to me. I could not have got to it in time to stop it. I did not tell Mr. Crombie that I was not well acquainted with the shunting.

Fireman *Stirling* recalled, states: I do not remember saying to the guard, "Mind that the van is clear of "the crossing before you leave it." It was clear of the crossing when I left it, but was still moving slowly back.

John G. Graham states: I have been nearly 14 years in the service, and over seven years signalman, all the time at Kilsyth. On the 6th August I came on duty at 10.40 a.m., to work till 10.25 p.m. The 9.25 p.m. train arrived at 10.27 p.m. The shunting operations were carried out as usual for the engine to get round the train. I knew there was a goods van to put off, and I came down from my box to go to help the guard to push it back. As I was going down some one, either the fireman or the guard, but whom I thought at the time was the guard, called out "All right," and I went back to my box and turned the points, and signalled to the driver to set back. The man who called to me was two carriage lengths away from me, and it was dark. If I had known it was not the guard who called to me I would not have signalled the train back. I always wait for a signal from the guard. I did not know that the fireman was assisting the guard, or that the guard was a stranger. When the man called to me the engine was back on its train. I could not go sooner to assist with the goods van, as I had the loop-points to shift. I was four or five carriage lengths away from my box when the man called out to me "All right."

Conclusion.

On this night, when the 9.25 p.m. train from Glasgow arrived at Kilsyth, it was already two minutes past the time at which it should have started back to Glasgow, and, as the train was full of arriving passengers, and there was a crowd upon the platform waiting to leave, there was considerable confusion, and the station master was unable to prevent a number of passengers from getting into the train, although he tried to do so. It therefore happened that, when, in the usual course, the carriages were pushed out, (fly-shunted) through the cross-over road, and, after the engine had got round the train, fly-shunted back again, the train was not, as it ought to have been, and usually is, an empty one.

It also unfortunately happened that the guard who was in charge of the train was a man who was not acquainted with the station, or with the mode of dealing with the train, and, owing to some misunderstanding, he was not in the brake-van when the carriages were knocked back, and there was therefore no one to apply the brake to steady them down, and stop them before striking the buffer-stop, which they did when still running at a speed of about three or four miles an hour.

The train upon arrival had been made up as follows:—Engine, tender, goods-van, brake-van, seven passenger carriages and rear brake-van, in which the guard had been riding; and the goods-van had to be left in the goods yard.

The guard having told his driver that he was not acquainted with the mode of shunting at Kilsyth, the latter, after the engine had been uncoupled at Kilsyth platform, sent his fireman to assist the guard, and the fireman, therefore, got into the brake-van nearest to the engine, and himself stopped the train after it had been knocked back through the cross-over road. The guard and fireman then, while the engine was running round the train, uncoupled the goods-van and pushed it back into the yard, and the fireman returned towards the signal-cabin and called out to the signalman that the goods van was clear of the crossing; whereupon the signalman set the points and signalled to the driver, who at once knocked back the train, and then went to the table to turn his engine. There is a good deal of difference in the statements of the fireman, the guard, and the signalman. The fireman says that, when he left the goods-van, it was clear of the crossing, and that he said to the guard that he was going away to tell the signalman, whom he met close to the foot of the cabin stairs; the guard says the van was not clear, and that the fireman told him to

take care that it was clear; while the signalman says that the fireman was some way from him when he called out, and that he himself was some distance from the cabin, going to assist the guard. However this may be, the result was that the guard continued to push back the van, and did not perceive that his train was running back until it was too late for him to get into it; the signalman thought that it was the guard who called to him "All right," or else he could not have signalled to the driver to set back; and the driver was under the impression that the guard was in his van as usual when he did so.

In my opinion the whole operation was performed in rather a hurried and slovenly manner, and I think that the collision ought not to have occurred if any of the men concerned (except the signalman who was in no way to blame) had been as smart as they should have been. The station-master, who knew that some passengers had got into the train, although he very much unestimated the number who had done so, ought to have taken care that the carriages, being partially loaded, at any rate, were not fly-shunted in the usual manner; the guard, who was ignorant of the operation to be performed, ought to have made it his business to find out; the fireman who was sent to assist the guard ought not to have left him until the guards van was at rest, and the guard was on his way to his brake-van; and the driver, who had been told by the guard that he was a stranger to the place, ought to have been careful to ascertain that he was in the van before he knocked the train back, although it must be said that he states that he was unaware that there were any passengers in the carriages.

Considering all the circumstances, however, I think that the fault of these men was not a grave one, and that it must be attributed more to their anxiety to get the train, already late, prepared to start with as little delay as possible, than to any deliberate want of care.

What is of more importance is to consider how this fly-shunting of loaded passenger carriages, a very objectional practice, and one opposed to the rules of the the company, can be prevented for the future, so long at least as passenger traffic continues to be carried on at this station, which, seeing that there is another station on the same line, within a quarter of a mile, is of doubtful necessity. It is manifest that it is quite impossible for the station-master alone to prevent a crowd of miners on a Saturday night from getting into the train, and, therefore, the company should either increase the staff at the station, and give the station-master a proper amount of assistance; or, in spite of the loss of time which would be entailed, give orders that the engine is to be coupled to the train, both when pushing it out and pushing it back; or what would be far the best plan, make such an arrangement as will enable the engine to run round the train without shunting it out at all, which could easily be done, at small expense, by adding a loop siding opposite to the platform.

The station-master had at the time of the accident been on duty for nearly 15 hours, and, as he has two stations to attend to, I consider he should have some relief; the driver and fireman had been on duty for $11\frac{1}{2}$ hours, and the guard had been on duty for about $10\frac{1}{2}$ hours.

I have, &c.,
F. A. Marindin,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Particulars of Damage to Rolling Stock.

North British first-class carriage No. 424.—Two buffer-castings broken.

North British first-class carriage No. 586.—One buffer-rod bent.

North British composite carriage No. 204.—One buffer-casting broken.

North British third-class carriage No. 882.—One body-glass broken.

North British third-class carriage No. 916.—One body-glass broken.

North British third-class carriage No. 1161.—Link of screw-coupling broken.

North British passenger brake-van No. 216.—Link of screw-coupling broken.

Printed copies of the above Report were sent to the Company on the 12th September.

NORTH BRITISH RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
26th September 1892.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 2nd instant, the result of my inquiry into the circumstances attending an accident which occurred on the 31st ultimo, near Balfron, on the Forth and Clyde section of the North British Railway.

In this case, as the 8.15 a.m. passenger train from Aberfoyle to Glasgow (consisting of engine and tender, brake-van, two first-class, one third-class, and one first-class carriages, and third-class brake-carriage) was travelling between Buchlyvie and Balfron stations at about 8.35 a.m., the engine left the rails, and, after running for about 186 yards, and passing over an embankment, was, with the tender, upset on its left side at the entrance of a cutting, the whole of the train remaining attached to the engine, and coming to a stand on the embankment, zig-zagged along the line, with all the wheels off the rails, which were displaced.

The driver and fireman of the train, who were on the engine when it was upset, were badly hurt, but only one passenger is returned as having been injured.

About 100 yards of the line were torn up, and in addition a number of chairs were broken.

The engine, tender, and all the vehicles, except one first-class carriage, were damaged. (For particulars, *see* Appendix.)

Description.

The scene of this accident was at a place named Ballat, two miles 58 chains west of Buchlyvie, and 1 mile 32 chains east of Balfron.

At the point where the first mark of a wheel having left the rails was found, the line, which is single, is upon a 29-chain curve to the right as the train was running, and upon a rising gradient of 1 in 375. Westward from the first mark the line continues in a shallow cutting for about 80 yards, and then runs out upon an enbankment about 15 feet high, with a culvert for the Garel burn, running again into a cutting at the west end of the embankment, which is only about 100 yards in length. The line rises all the way from Buchlyvie, upon gradients of 1 in 82, 1 in 98, 1 in 112, and 1 in 132 for 2,420 yards, and then upon gradients of 1 in 530, 1 in 230, and 1 in 375.

The line is a very old one, and the permanent-way on this section was relaid about 17 years ago with the following materials:—Double-headed iron rails in lengths of 24 feet and 21 feet, and weighing 75 lbs. per yard; cast-iron chairs weighing 34 lbs. each; fish-plates weighing 20 lbs. per pair; 2 cast-iron spikes for fastening each chair; outside keys; sleepers of creosoted pine timber, 9 feet in length and 10 in. × 5 in. in section, nine to each 24 ft. rail; and ballast of broken slag, gravel, and ashes. Upon the 29-chain curve there is a cant of $3\frac{3}{4}$ inches.

A large number of the rails have been turned, but the sleepers are in fairly good condition.

The engine of the train, No. 237, is a six-wheeled engine with driving and trailing wheels coupled. It was built in 1859, ran till January 1879 with a mileage of 479,338 miles, was then rebuilt, and ran from July 1881 to August 1892 with a mileage of 413,196 miles, but was thoroughly repaired and turned out of the shops in February 1892, since which date it has run 15,681 miles.

The weights were then as follows:—

	Right.		Left.		Total.	
	Tons	Cwts.	Tons	Cwts.	Tons	Cwts.
Leading-wheels	5	2	4	18	10	0
Driving-wheels	6	1	5	19	12	0
Trailing-wheels	4	18	4	14	9	12
Total	16	1	15	11	31	12

It is fitted with a Westinghouse brake which works blocks on the four tender wheels, and was at the time of the accident in operation throughout the train, but the engine wheels are not braked.

Rule 332 in the Company's book of rules is as follows :—

"Each foreman or ganger must walk over his length of line every morning and evening on week days, and, where passenger trains are run, once on Sundays, and tighten up all keys and other fastenings that may be loose : and he must examine the line, level, and gauge of the road, and the state of the points, marking, and if necessary repairing such as are defective. * * * "

Evidence taken 2nd September.

John Watson states: I have been 11 years in the service, and a foreman of permanent-way since May 1891. I have been in charge of the length of 3½ miles east of the 20th mile-post all that time. This length includes Ballat where the accident took place. I walk my length night and morning. I live at Balwill near the east end of the length. On the 31st August I started at about 10 minutes past 6 a.m. from my house. I first looked over the points and crossings at Balwill siding, and then went to the east end of the length. I then went to Buchlyvie, to take the train from Stirling due at Balfron at 7.20 a.m. I then went to the west end of my length, and then came and examined the station yard at Balfron. I assisted a joiner to put in a post at the back of the goods shed, and was just starting to walk over the remainder of my length when I heard of the accident from the signalman. There are four men in my gang, and all of them live west of the place where the accident happened. That morning the gang collected at Balfron, and were going away to work at the east end of the length after assisting the joiner with the post. None of us had that morning walked over the part of the line where the accident took place. I had been over it the night before at 5.30 p.m. Everything was then in good order. It is my duty to walk the length every morning. I generally walk it the first thing, but that morning, as I wanted to help the joiner, and I had to go back to the east end to commence work, I came down from Buchlyvie by train. It was five days since we had done any work at Ballat, all we did then was getting the road into line. It was a fortnight before that that we last did any lifting. When I heard of the accident I went away to Ballat with three of my gang. I found the whole of the 8.15 train from Aberfoyle off the rails with the engine and tender on their left sides, on the left-hand side of the line in a cutting just at the west end of the embankment over the Garel burn. I went back to examine the line. The first mark I found was at a rail joint, some way behind the tail of the train. I found the high rail east of the joint had the top split off and sprung up for about an inch. On the end of the rail west of the joint there was the mark where the flange of a wheel had struck, and then run up on to and over the outside of the left rail. From that point westwards for some distance there was not much damage to the permanent-way, except that about half the chairs were broken through the seat, mostly on the left or high side. Apparently only one pair of wheels had been running off the rails. No sleepers were actually broken in that length. Where the train was standing, and for some yards behind the rear van the road was broken up. The road has not been relaid at Ballat since I have been there. A number of the rails are turned rails, especially on the low side, where nearly all are turned. All the chairs have two spikes, and some have three spikes. On some of the sleepers there have been spikes driven outside the chair on the high side, but not in my time. There has not been much difficulty in keeping the rails in line at that place. It was a wet night before the accident, but no water lies in that cutting. There were no spikes drawn near the first mark. The gauge round the curve is easy, between ¼ inch and ⅛ inch slack. The cant is 3¾ inch on the curve. East of the first mark the road is in the same state as it was before the accident. My regular hours of work are from 7 a.m. to 6 p.m., with one hour off for dinner.

William Rodger states : I have been for 35 years in the railway service on the Forth and Clyde line, and I am permanent-way inspector of the line from Stirling to Balloch, including the Aberfoyle branch. I think that the line at Ballat was relaid about 17 years ago, not less. The rails are 75 lbs. double headed iron rails in 24 feet lengths and 21 feet lengths. The chairs weigh 34 lbs., and each is secured by two spikes. There are nine sleepers to each 24-foot rail. They are 9 feet in length and 10 ft. × 5 ft. in section, and are made of pine timber creosoted. The ballast is broken slag, gravel, or ashes. The fish-plates weigh 20 lbs. per pair. I think it is about three weeks since I walked over the line between Balfron and Buchlyvie, and I reported it to be in safe condition. A number of the rails are turned, most of them I should think, but the sleepers are in fair order. The rails are a good deal worn. I think that of the whole length of 30 miles nearly half has been relaid within the last 12 years, but only about three miles with the new 84 lbs. steel rail. On the remaining length relaid some of the rails are old iron rails, and some are partly worn steel and iron rails from other parts of the system. I was at Kippen when the accident occurred, but I had no means of getting to the place till about half-past 11. The fireman's description of the position of the train and the state of the road is correct. From the first mark to where the engine lay was 192 yards. From the first mark to the point where the road was broken up was about 80 yards, and the rear van of the train was about 30 yards ahead of that point. The road was in proper running order up to the joint where the rail was split. The gauge is rather slacker, perhaps ¼ inch slacker, than we usually lay even on a curve, but there was a level top, and the gauge and cant were regular. There were no low joints, and no spikes drawn. There were several chairs with an extra spike. On some sleepers there was an extra spike on the high side against the outside of the chair. These were put in by the foreman who preceded the present man. The foreman should by rights have walked his length the first thing in the morning, according to practice, but his reason for not doing so that morning is explained in his evidence. I had told him to send assistance to the joiner, but I did not tell him to go himself, and he unthinkingly did so before walking over his length. Three trains had passed that point that morning before the accident happened, two down and one up.

John Clark states: I have been between 9 and 10 years in the service, and a guard for over 3 years. On the 31st August I came on duty at Aberfoyle at 6.45 a.m. to work till 5.50 p.m. I had left duty on the previous day at 7.56 p.m., after 12 hours 40 minutes duty, being at rest from 12.15 till 2.45, and also from 2.56 till 4.22. I made first a short trip to Buchlyvie and back, and then I left Aberfoyle as guard of the 8.15 a.m., train to Glasgow. It was made up of engine and tender and nine vehicles. We detached three vehicles at Buchlyvie, and after that the train was

made up as follows:—Engine and tender, brake-van, two first-class, one third-class, one first-class, and a third-class with brake compartment in which I was riding. The train was fitted with the Westinghouse brake. We started from Aberfoyle at 8.15 a.m., and left Buchlyvie at 8.30 a.m., three minutes late. We ran at our usual speed after leaving Buchlyvie, and were not making up any time. I had no warning whatever of the accident. We were running at about 36 miles an hour, when I heard a peculiar sound, and I looked out on the left side, and saw that the carriages in front of me were lurching as if they were off the rails. At that time my van was just entering on to the embankment. Just as I looked out I felt the application of the Westinghouse brake. I immediately pulled open the Westinghouse cock on my van, and we pulled up very sharp, so that I was thrown against the end of the van. I was not much hurt, but just got a shake. I felt nothing whatever unusual before I looked out, and at that time my van, as I have said, was just at the end of the embankment. If the brake had been put on sharp before that I must have felt it. After leaving Buchlyvie I looked at the gauge in my van, and I saw that there was between 75 and 100 lbs. pressure. I cannot complain of the state of the line between Buchlyvie and Gartness junction, and the train was running smoothly up to the time that the accident happened. When I got out I found that the whole of the train was off the rails in the position described by the foreman and permanent way inspector. I first went to the front of the train, seeing that the engine was upset. Finding the driver and fireman both clear of the engine I went back along the train, on the proper left side, and by the time I got to the rear of the train all the passengers except one were out. This passenger, when I asked him if he was hurt, said he had got a severe blow on the nose. No other passenger complained to me of injury. I do not know of any one having been injured by jumping out. I then went back to Buchlyvie for assistance and to protect my train. I did not examine the line until after I came back from Buchlyvie. There were about 20 passengers in the train.

Evidence taken 21st September.

Alexander Loudon states: I have been 13½ years in the service, and about 4½ years a driver. I have been driving on the Aberfoyle and Glasgow section since 1st June 1892. On the 31st August I came on duty at Aberfoyle at 8.5 a.m. to work till 8.5 p.m. I left duty the previous day at 6.30 p.m. My engine, No. 237, is a six-wheeled engine, with driving and trailing wheels coupled, and a four-wheeled tender. It was in good order. The engine was fitted with a Westinghouse brake, which worked blocks on the tender wheels, but not on the engine wheels. The brake was in good order. I was driver of the 8.15 a.m. train from Aberfoyle, which consisted of six vehicles, after we had detached the Stirling carriages at Buchlyvie. I think we were about three minutes late in leaving Buchlyvie. I was running at my usual speed after leaving Buchlyvie. I was, if anything, losing time. I was running at about 30 miles an hour when approaching Ballat, as I think it is called. Just as I was entering the cutting I felt the engine leave the rails and run on to the sleepers. I cannot say to which side the engine ran off, or which wheels left the rails first. I at once shut off steam, and then put on the Westinghouse brake, which was working through the train, with a pressure of about 70 lbs. I think the brake was well on before we got on to the embankment, and I had reversed my engine after applying the brake. I did not apply steam, and I did not apply the sand. Both I and my mate remained on the footplate until the engine fell over on its left side, just at the entrance of the cutting at the other side of the embankment. I was a good deal cut and injured. My mate was badly cut on the foot, and he is still in the infirmary. The whole of my train was off the rails. I was not able to go back to examine the line. I was looking forward along the line when the accident happened, and I had not seen anything amiss with the rails. If the end of a rail had been sticking up I would probably have seen it, although I might not have done so. I felt nothing unusual or wrong with the road the night before when passing over the same place. It is a rough road between Buchlyvie and Gartness. There are a number of turned rails. There is no limit of speed ordered, but we do not run very hard. It was a dull morning, and the rails were greasy. I re-commenced work on Monday last.

Robert Bathgate states: I have been about 11 years in the service, and a driver for over three years. I have been driving on the Forth and Clyde branch since February 1892. My engine No. 98 is a tank-engine with leading bogie, and driving and trailing wheels coupled. On the 31st August I came on duty at Aberfoyle at 6.30 a.m. to work till 5.50 p.m. I had left duty the previous day at 8 p.m. after 12 hours work. I was driver of the 7.15 a.m. train from Aberfoyle to Glasgow. I stopped at Gartmore, Buchlyvie, and Balfron. I think that when I passed the place where the accident happened at about 7.40 a.m., I was running at from 23 to 25 miles an hour. I neither saw nor felt anything unusual. The line between Buchlyvie and Gartness is rough always. I have never made any complaint as to the state of the line. I took it that the roughness was due to many of the rails being turned.

Matthew Burdon states: I have been about 26 years in the service and a driver for the whole time. I have worked over the Forth and Clyde line for 17 years. On the 31st August I came on duty at Balloch at 5.30 a.m. to work till 7.30 p.m. I am off duty for two hours from 1 p.m. to 3 p.m. at Balloch, when I go home for my dinner. Those are my regular hours, and I left duty the night before at 7.30. I work backwards and forwards between Balloch and Stirling, two trips each way. I passed the place where the accident happened, with the 6.30 a.m. train from Balloch to Stirling, at about 7.25 a.m. I did not see or feel anything unusual with the road. It is always rough where the rails are turned. I have never made any report as to the bad state of the road. My engine was No. 326. It is a six-wheeled engine with leading and driving wheels coupled, and a four-wheeled tender.

Conclusion.

A consideration of the foregoing evidence, and an examination of the line, leave no doubt as to the cause of this accident, which might have been a serious disaster if the engine had not providentially kept upon the line, after leaving the rails, instead of running over the edge of the embankment, which, considering the curve, it might have been expected to do. It was found that the top of a turned rail east of a joint, on the left or high side of a 29-chain curve, had been split off for a length of about three feet, so that the end next to the joint had sprung up for about an inch, and was turned

outwards, leaving the butt of the rail west of the joint open to be struck by the flange of the left leading wheel of the engine, which mounted and ran over the outside of the rail, and then over the chairs for about 88 yards, with the corresponding right wheel running in the 4-ft. way, until the line was broken up, and the whole of the train left the rails. The fracture of the rail shows that it had been flawed for a considerable time, but the flaw would have been concealed by the fish plates, and although the top may have been split off by the last train which passed, about an hour previously, I believe it to have been done by the engine which left the rails, the flanges of the leading wheels being rather sharp. Neither the foreman nor any of his gang had walked over the length that morning as it is the duty of the foreman to do the first thing; but his omission to do so did not in my opinion lead to the accident, for if the actual fracture of the rail was caused, as I believe it to have been, by the engine of the 8.15 train, there would probably have been nothing to call the attention of the foreman to the dangerous condition of the line when he passed this point, even if he had done so after the passing of the previous train, which might not have been the case. Moreover, although according to the practice he should have walked over his length before doing any other work, the rule, quoted above, only enjoins that he is to do so night and morning, and the explanation he gives of the manner in which he was employed seems reasonable. I do not therefore consider that this man was guilty of anything more than an error of judgment at the most.

Although the gauge of the line upon this curve was too slack the line generally speaking does not appear to be badly looked after by the permanent way gang, who can hardly be held responsible for the state of the rails, but from what I saw at the place where the accident occurred, and at other places, I have no hesitation in reporting that the piece of line between Buchlyvie junction and Gartness junction is quite unfit for the running of fast passenger traffic. I noticed other rails which had a flange split off, and which had been turned so that this flange was the lower one, and while nearly all the rails were a good deal worn, many had a bad running face, and a great number were turned rails. After deducting time for the station stops the average speed of the 8.15 a.m. train is as much as 40 miles an hour between Aberfoyle and Blanefield, a distance of 34 miles, and the average speed of this train between Buchlyvie and Balfron, calculating that it has seven minutes to run from the time of leaving Buchlyvie to the time of arriving at Balfron, is 34 miles an hour, which means that at some places it is probably running at as much as 40 miles an hour at least.

This is far too high a speed for such a line as this, which in its present state would certainly not be passed for passenger traffic if it were submitted for inspection as a new line, and I would strongly recommend the Company to lose no time in relaying the permanent way with new and not with partly worn rails, and until this is done to limit the average speed between the points mentioned to 20 miles an hour at the outside.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

F. A. Marindin,
Major, R.E.

APPENDIX.

Damage to Rolling Stock.

North British engine, No. 237.—Smoke-box, lamp-holders, hand-rails, spring-hangers, foot-steps, injector-cocks, reversing handle, life-guards, sand-pipes, and relief-cocks damaged. Engine-cab, boiler cleading, and foot-plate damaged.

North British engine tender, No. 237.—Tender coping and handrail damaged.

North British first-class carriage, No. 82.—Buffer-rod, end bar, and end panel damaged.

North British first-class carriage, No. 426.—Buffer-rod, end bar, mouldings, and step-board damaged.

North British third-class carriage, No. 249.—Step-boards, lamp-irons, end, side, and bottom bars damaged.

North British third-class carriage, No. 354.—Step-boards, hangers, and lamp-irons damaged.

North British passenger brake-van, No. 179.—End glasses, brake-column, end-bar, footboards, draw-bar, screw coupling, axle, also roof and end of van damaged.

Printed copies of the above Report were sent to the Company on the 19th October.

NORTH BRITISH RAILWAY.

Board of Trade, (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
10th January 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 3rd instant, the result of my enquiry into the causes of a collision which occurred on the 26th ultimo, at Polmont on the North British Railway.

In this case, the 1.35 p.m. down Caledonian train from Edinburgh to Larbert, consisting of engine and tender, third-class brake-carriage, two composite carriages and brake-van, over-ran the down home-signal at Polmont junction, west of Polmont station, and came into collision at about 2.5 p.m., with the two waggons attached to a North British engine, No. 267, which was engaged in shunting operations, and was just moving forward from a point about 12 yards west of the junction home-signal.

The engine and waggons were driven forward for about 115 yards, and one of the waggons, which had been derailed, was drawn on to the rails again at a crossing just before coming to a stand.

No vehicle on the passenger train, which came to a stand in about 35 yards after striking the waggons, left the rails, and the only person injured was the guard of the train, who was in the rear brake-van, and who was slightly cut on the forehead.

The damages to the rolling-stock were as follows :—

Caledonian stock.—The buffer-beam, and two front buffers of engine No. 44, broken.

North British stock.—Two waggons damaged, and buffer-beam of engine No. 267 bent.

Description.

Polmont is a through station on the North British double line between Edinburgh and Glasgow, running from east to west, and Polmont junction, where the line to Larbert and Stirling diverges from the Edinburgh and Glasgow line towards the north, with facing-points on the down line, is about 350 yards west of the station.

The line through the station to the junction is nearly straight, and upon gradients of 1 in 600, and 1 in 882 rising towards the west.

The point of collision was about 19 yards west of the junction home-signals, and about half-way between the west end of the station and the junction.

Polmont junction signal-cabin is on the north side of the line near the junction, and Polmont station cabin is on the south side of the line above the down platform.

The following are the only signals to which it is necessary to refer, viz. :—

Polmont station down distant-signal, 1,061 yards east of the cabin; Polmont station down home-signal, which is on the south side of the line, 189 yards east of the cabin; Polmont junction down distant-signals, which are two arms below the station down home-signal; and Polmont junction down home-signals, which are two high signals on the north side of the line, 152 yards east of the junction.

All these signals are good signals, the junction distant-signals being visible in clear weather for 830 yards, and the home-signals for at least 600 yards.

The following distances eastward from Polmont junction-points should be noted :—

	Yards.
To Polmont junction cabin	25
„ the point of collision	143
„ Polmont junction down home-signals	162
„ water-column at west end of down platform	310
„ Polmont station signal-cabin	383
„ „ „ down home and Polmont junction down distant-signals	572
„ Polmont station down distant-signals	1,444

The line is worked upon the absolute block-system, but between Polmont station and Polmont junction station yard working with a bell code of signals, has been authorised.

Under the rules in force, the signal-man in Polmont station-cabin can accept a second down train from Bo'ness high junction, about $2\frac{3}{4}$ miles distant, at caution,

when there is a down train standing in the station, and may accept a train under the ordinary "Line clear" signal when the line is clear to the junction home-signals; and he may lower his signal for this train to run through the station up to the junction home-signals, if he can see that the line is clear so far, even although shunting operations may be in progress at the junction, just under cover of the junction home-signals.

Evidence.

Edward Mackie states: I have been nearly 13 years in the service of the North British Railway Company, and a signalman for about 12 years; at Polmont for about 11 years. On the 26th December I came on duty in Polmont station cabin at 6 a.m. for eight hours, having left duty at 6 a.m. on the 25th December. There are 13 working levers in the cabin. There is absolute block working between Bo'ness high junction and Polmont, under the ordinary rules. There are no special rules for the cabin. Between Polmont station and Polmont junction there is no block working, but there is a code of bell-signals, in accordance with the rule in the working appendix. If the station yard is not clear up to the junction home-signals, a down train is not accepted from Bo'ness high junction except under the "Section clear but station or junction blocked" signal, but if the line is clear to the junction home-signal a train is accepted under the usual "Line clear" signal. If we cannot see the line as far as the junction-signals, in consequence of fog or snow, we then accept all trains under the "Caution" signal, and in such cases we ask the junction signalman whether the line is clear before lowering our signals. If we can see for ourselves we lower our signals on our own responsibility. We do not work to the junction-signals at all. On the day in question the following are the signals recorded for the 1 p.m. North British train from Edinburgh to Glasgow:—

"Be ready" received from Bo'ness high junction - - - - -	1.28
Accepted at once.	
"Train entering section" signal received -	1.32
"Belled on to Polmont junction by attention signal and three beats" - -	1.32
Train passed - - - - -	1.34
"Train out of section" signal given -	1.34

At 1.59 the station pilot engine, which was shunting, was belled forward to the junction with four waggons attached. I did not know what work this engine had to do at the junction, and after it left me I had no more to do with it, and received no further signal for it. The following signals are recorded for the Caledonian 1.35 p.m. train from Bo'ness station to Stirling and the North:—

"Be ready" received from Bo'ness high junction - - - - -	1.58
I offered the "Caution," but it was not accepted; and I then accepted the train with "Line clear" at - - - -	1.59
"Train entering section" signal received -	2.3
Belled on to Polmont junction - -	2.3
Train passed - - - - -	2.5
Train out of section given to Bo'ness high junction - - - - -	2.5

The last four signals were entered by the man who relieved me at 2 p.m. I saw this man take off the home-signal for the train just as I was leaving the cabin, but cannot speak as to the distant-signal. When I accepted the Caledonian train at 1.59 the line was clear up to the junction home-signals. I could see the line clearly, and all my signals, except the down distant-signal. It was a little foggy, and I could not see so far as this signal. I could see the junction down home-signals plainly, and I could see the bridge near the junction, and the junction up signals also. I was on the down platform when the Caledonian train passed. It was running at about 30 miles an hour I should say. Steam was shut off. I cannot speak as to the brakes, but the wheels were not skidding as the train passed me. The driver whistled at the junction distant-signal, and again when passing through the station. He gave the proper whistle—two in number—for the branch to Stirling. After passing the end of the platform, the driver whistled continuously, as if for danger. Both the junction home and distant signals were at danger. I did not see the pilot engine and waggons at the junction at that time. I thought that the Caledonian train was running a little too fast to stop at the junction home signals. I could not see exactly what the men on the engine were doing. I did not notice the guard, or see whether or not his brake was on. I heard the collision and went down to the place. When I got there no vehicle was off the rails, although one or more waggons had been off.

Robert Leishman states: I have been 12 years in the service of the North British Railway Company, and a signalman for about 10 years; at Polmont for about 5½ years. On the 26th December I came on duty at 2 p.m., or a little after it, perhaps 1½ or 2 minutes. I relieved Mackie. The signals recorded for the 1.35 p.m. down Caledonian train are as stated by Mackie. When I came on duty the train had already been accepted, but I belled it on to the junction with the proper number of bells. I was aware that the pilot engine was shunting near the junction, but I saw that the line was clear up to the junction home-signal. I could see these signals plainly. About a minute after I belled on the train, I took off my down home-signal, and about a quarter of a minute later I lowered my down distant-signal. I think the train was by that time inside the distant-signal. That is in accordance with the rule if the line is clear to the junction-signals. We do not work in relation to the junction signals at all. The junction home and distant signals were at danger. The train was running at about 20 miles an hour I should say when it passed me. Steam was shut off some time before the train reached my down home-signal. The driver gave one whistle when approaching my home signal, and again a long whistle when at the west end of the station. I did not hear any more whistling. The brakes were on when the train was passing my cabin. I was rather apprehensive of a collision, as I thought the train was running too fast to stop at the signals, but I could do nothing to avert it. It was a little foggy.

David Robertson states: I have been over 13 years in the service of the North British Railway Company, and a signalman for 11 years; at Polmont for nearly 10 years. On the 26th December I came on duty in Polmont junction-cabin at 6 a.m. for eight hours, having left duty at 7.30 p.m. on the 25th December. The pilot engine was belled on at 1.59, but the signal was taken and booked by George Kennedy, who was just relieving me. I was still in the cabin when the collision took place. I did not see the passenger train approaching, as there was some fog. I heard it belled on. The pilot engine had two waggons attached, and I think was just moving forward when the waggons were struck. The train engine came to a stand near the bridge. Both home and distant signals were at danger. The train was whistling when passing the station. I spoke to the driver after the collision. He asked me the number of the pilot engine, for the purpose of making his report. When I told him that it was the Grangemouth local goods which he had struck, he said he had clear signals "Back there,"

and I said "Not our signals." He said, "I know that I overshot your signals." I said "Bear in mind there is no block through the station," and he seemed not to have known this. He pointed to his brake pipes and said that his pipe was frozen, and that he had only his train-brakes to depend upon. It was a very cold day. I then told him the number of the pilot engine (267). The driver was quite fit for duty, and had no appearance whatever of being in liquor. I could not see the station from my cabin. I do not think the signal-lamps were lighted. I could not always see my home-signal arms between 12 o'clock and 2 o'clock, at which time the fog lifted. I would not accept any up trains under the "Caution" signal between 12 and 2 on account of the state of the weather.

George Kennedy states: I have been in the service of the North British Railway Company about four years, and a signalman for about two years; at Polmont for a year. On the 26th December I came on duty in the junction-cabin at 2 p.m. for eight hours, having left duty at 2 p.m. on Saturday the 24th December. The pilot engine was belled on to me from the station-cabin at 1.59, and arrived at 2 p.m. It left some waggons on the line, then went into the siding and dropped one or more, made another shunt, and then came out and backed on to the waggons. It was coupled on, and I was going to send it forward up the main line to clear the road for the Caledonian train to go up the branch. They were just moving forward when the collision took place. The Caledonian train was belled on at 2.3 p.m., and the collision took place at 2.5 p.m. The signals were at danger. It was foggy. I could see the waggons before they were struck. I did not see the passenger train until the engine struck the waggons. I did not hear any whistling. I could see my home-signal arms, and they were at danger. I could not see my distant-signal arms. The Caledonian train is due to pass at 2.4. There is no special rule as to the time at which shunting should cease before a passenger train is due, but there is a general rule that a line is to be kept clear for passenger trains. If the pilot engine had gone into the siding with all the waggons attached the first time, I would have kept it there, but the waggons had been uncoupled and left on the line, and I had turned the points from the siding before I knew really what had been done. The Caledonian engine came to a stand nearly under the bridge, where I could see it.

James Barclay states: I have been about 18 years in the service of the North British Railway Company, and 14 years a driver. On the 26th December I came on duty at 7 a.m. to work till 7 p.m. That is my usual day's work. I had been off duty the previous day. I was employed working the local goods traffic to and from Grangemouth. I came light to Polmont from Bo'ness junction about an hour before the collision took place, and after that was employed in shunting at Polmont. When I went forward from the station to Polmont junction at about 2 p.m. I had four or five waggons attached. I left one waggon on the main line, made two shunts into the S. & D. sidings, a second waggon being shunted back on to the one standing on the main line, and I then came back on to these two waggons to hook on, and wait instructions from the guard. I got no further instructions, because as soon as we were hooked on, the guard who was on the line gave a shout, and I looked towards the station. I saw a train approaching. It was then near the water-column. I immediately put on steam and started, and was moving ahead when we were struck. I was driven forward by the collision, and came to a stand near the cabin. One waggon, that next to the engine, I think, was knocked off the rails, but got on again. It was rather foggy, but I saw the engine which struck us when it was near the water-column, perhaps a little west of it. The engine commenced to whistle just after my guard shouted out. It seemed to me to be the ordinary whistling for the signals. I did not see or speak to the driver after the collision. I think the Caledonian train was running at 10 or 12 miles an hour when the collision took place. My engine, No. 267, is a six-wheel coupled goods engine with tender. My tender was in front. The junction home-signals were at danger.

James Bartholomew states: I have been about six years in the service of the North British Railway Company, and a fireman for about two years. On the 26th December I was fireman with driver Barclay. I can corroborate his evidence.

John Fleming states: I have been nearly seven years in the service of the North British Railway Company and a goods guard for nearly four years. On the 26th December I came on duty at 6 a.m. to work till 6 p.m. I was not on duty on the 25th. I was working with driver Barclay. We had four waggons attached when we went forward to the junction at about 2 p.m., and after making two shunts there were two waggons coupled on to the engine on the main line. I heard no instructions from the signalman what to do after the waggons were coupled on, but I was going with the two waggons up the main line to Garngaber siding. Immediately after the waggons were coupled on I saw the Caledonian train approaching, and I shouted to my driver, who put on steam and started, but had only run about ten yards before the Caledonian train which was running pretty fast, overtook him. I saw fire flying from the wheels of the Caledonian engine when I first caught sight of it a little west of the water column. It was the waggon next the engine which was knocked off the rails, and got on again. I heard a whistle from the Caledonian engine when it was near the distant-signal, but not afterwards.

James Hart states: I have been 22 years in the service of the Caledonian Railway Company, and a driver for between 9 and 10 years. I have been driving on and off for about eight months with passenger trains on the section between Edinburgh and Larbert, but have driven goods trains on that section for several years. On the 26th December I came on duty at 6 a.m. at Edinburgh to work till 5 p.m. I had not been on duty on the previous day. My engine, No. 44, is a six-wheeled engine with driving and trailing wheels coupled, and a six-wheeled tender. It is fitted with a Westinghouse brake working blocks on the coupled wheels and the tender wheels. I left Edinburgh at right time with the 1.35 p.m. train for the North. There were four carriages in the train, all fitted with the Westinghouse brake. We had to stop only at Grahamston before reaching Larbert, where I would leave the train. Between Edinburgh and Polmont there was no stop, but I was slowed by signals at Haymarket west junction, and Broxburn junction. I used my Westinghouse brake at both places, and it acted properly. I was running with a pressure of 80 lbs. I am sure I had that amount of pressure when approaching Polmont. The Polmont station down distant and home signals were both off when I sighted them. Owing to the fog I could not see them above 40 yards off. The distant-signal for Polmont junction was at danger when I sighted it about 40 yards off. I had shut off steam at the usual place just after passing Polmont station distant-signal, and my speed was about 40 miles an hour when I saw the junction distant-signal at danger. I at once applied my Westinghouse brake slightly, reducing the pressure by about 12 lbs. I felt the carriages dragging on the engine, and I was sure from this that the brake did not act upon my engine wheels. I immediately shouted to my fireman to apply the hand-brake which he did, and I applied the Westinghouse brake full power, reducing the pressure to 25 lbs. This still had no effect on the engine. I opened the sand-valves and reversed the engine, but

by that time we were close to the station cabin. I whistled twice for the junction-signal. I saw the junction home-signal at danger, just after coming below the road bridge close to the station cabin. At that time I had done all I could to pull up my train. After passing the water column at the west end of the station I saw the engine and waggons on the main line between me and the junction cabin, and protected by the signal. The fireman on the shunting engine was on the step on the left-hand side of the engine as it was standing. I waved to him to go ahead. I am certain the engine had not moved ahead before I struck the waggons. The speed had by that time been reduced to four miles an hour. Neither I nor my fireman were knocked over or hurt. I knew that through Polmont station there was not absolute block working, but the practice as to working the signals has been as follows:—Whenever there is shunting going on at the junction, whichever side of the junction home-signal it may be, the station distant-signal is kept at danger, and the home-signal is not lowered until the train is drawing up to it. After the signal has been lowered I have heard the signalman in the station calling out to "steady up," as the engine was passing the cabin. This has been at night. This has happened when no "caution" has been given at Bo'ness high junction, and the train has been approaching under a "line clear" signal. I have aways understood that when the station distant and home signals were off I should have a clear run to the junction signals, and that there would be no shunting near the signal, and on this occasion the signals were off. I do not say that when these signals are off I am not sometimes stopped at the junction signals, and ought not to be prepared to do so. I would have done so on this occasion if the brake had not failed. I took the train forward to Larbert after 12 minutes delay. My brake did not act upon the engine either at Grahamston or Larbert. While standing at Larbert, thinking that the frost, which was very intense, had affected the washer of the tender air-piston, I kindled some waste and tried to thaw it. Before leaving Larbert on my return journey at 3.44, the brake on both engine and tender came on, but leaked off very quickly. After getting back to Edinburgh I reported the brake being out of order, and the tender air-piston was examined. I produce the washer which was taken out, and which has been charred.

David Cockburn states: I have been about seven years in the service of the Caledonian Railway Company, and a fireman for four years. On the 26th December I was fireman with driver Hart. His evidence is correct.

James Henderson states: I have been 22 years in the service of the Caledonian Railway Company, and a guard for over 16 years. On the 26th December I came on duty at 6.20 a.m. at Aberdeen to work till 6 20 p.m. I had been off duty the day before. I was guard of the 1.35 p.m. train from Edinburgh (Princes Street), which was made up as follows:—Engine, tender, third-class brake carriage, two composites, and brake-van. The whole train was fitted with the Westinghouse brake. The brake was tested before starting, and appeared to be in good order. My gauge showed a pressure of 75 lbs. The brake was used at Haymarket west junction and seemed to act all right. The brake was applied in the ordinary way for checking speed for the junction when the engine was near the station home signal at Polmont, the pressure being reduced about 10 lbs. I felt no subsequent application. I saw the junction home-signal at danger after the collision, but had not seen it before. The brake remained on, so I went across my van to see if the junction home-signal was at danger. The collision took place before I could open my window to look out. The sidelight was obscured by frost. I think the speed when the collision took place was about 12 miles an hour. I was not knocked down, but was thrown against the letter-rack. I heard no whistling before the collision. After the collision I spoke to my driver. He told me he had run past the signal, but said nothing to me about his brake failing that I can remember. He said nothing about it at Larbert. I went on to Aberdeen. There were about 20 passengers in the train I think. None of them were injured, and no vehicle in my train left the rails. It was a little foggy. I could see the station from where we stood after the collision. My van and the two composites stopped short of the junction home-signal.

Conclusion.

This slight collision occurred under the following circumstances:—At about 1.59 p.m. the shunting-engine at Polmont went forward from the station to the junction to carry out some shunting in a down siding, and, after completing this work, had just been coupled on to two waggons which had been left on the down main line, a little west of the junction home-signals, when the 1.35 p.m. Caledonian down passenger train to Larbert was seen approaching at some speed about 160 yards off. The driver of the shunting-engine, upon the guard shouting to him, put on steam, and was just on the move ahead when he was struck by the Caledonian train, which was still running at a speed of, probably, eight or ten miles an hour, although the engine had then passed the junction down home-signal, which was at danger, by some 15 or 20 yards. The Caledonian train had been accepted in ordinary course from Bo'ness high junction by the signalman in Polmont station cabin, who belled it forward to Polmont junction cabin, and who, seeing that the line was clear as far as the junction home-signals, had lowered his own down home and distant signals for the train, as he was by his rules justified in doing. The Polmont junction down distant and home signals were, however, not lowered, and it was the duty of the driver of the Caledonian train to stop at the latter signals. He states that he shut off steam as usual, just after passing the station down distant-signal, 1,280 yards from the junction home-signals, that he had reduced his speed to about 40 miles an hour when he sighted the junction down distant-signals at danger, when about 40 yards from there; that upon seeing these signals (which are 410 yards from the up home-signals) at danger, he at once applied his Westinghouse brake, which he felt to take effect on the carriages, but not upon his engine or tender; and that, although his tender hand-brake was applied, his engine reversed, the rails sanded, and the Westinghouse brake applied at full power, he was unable to avoid over-running the junction home-signals.

A subsequent examination of the brake showed that the leather-washer on the piston of the tender-brake was in such a condition that the air, when admitted from the reservoir escaped at once, thus rendering the tender-brake, and also the brakes on the engine, which are fed by the same supply-pipe, of very little use.

The leather had evidently been charred, and pieces of it had fallen off, every application of the brake making its condition worse, and I have no doubt that when the driver applied his brake at Polmont it had very little effect on the engine or tender.

The driver thought that the reason that the brake did not act was that the piston had been frozen, and, therefore, on arrival at Larbert he burnt some waste under the cylinder, but I believe that it is quite clear that the charring of the leather was not done at Larbert, but was due to the fires which had been kept burning under the engine during the night in order to prevent any freezing of the pipes.

Such being the case I should attribute this collision, to a great extent, to the failure of the brake to act properly, for there could have been no difficulty in stopping the train, which consisted of only four vehicles, in the distance of 410 yards between the distant and home signals, if the brake had been in good order, and indeed it might have been expected that the brake on the carriages, together with the hand-brake on the tender, would have done so.

I do not, however, think that the driver of the Caledonian train, James Hart, who had at the time been on duty for eight hours, can have been keeping as good a look out as he should have been keeping, or else he would have seen the junction distant-signal at danger a good deal further off than 40 yards, in which case he would probably have applied his brake sooner, and have been able to stop his train short of the point of collision. There was no doubt a certain amount of fog, but, judging only from the driver's own evidence as to the point where he first saw the junction home-signals at danger, signals were visible for at least 200 yards.

Although it is clear that the collision would not have occurred, if it had not been for the partial failure of the brake, it is equally clear that some alteration is needed in the rules for working at this station. There can be no doubt that with such a short block section as that between Polmont station and Polmont junction it is not safe to allow the signals for a down through train to be lowered at Polmont station when shunting is going forward at the junction, and it is very necessary that the signalman at the junction should in some way control the down-signals at the station. It is very usual in such cases to issue a regulation which would, in this case, have the effect of obliging the signalman at Polmont station to keep the down-signals at danger until the approaching train had come nearly to a stand, whenever the Polmont junction down distant-signal was at danger, and I would strongly advise the North British Railway Company to adopt this mode of working here, and at other similar places on their line.

In some places it would be advisable also to give to the signalman in advance an actual control over the home-signal lever at the cabin in rear, and this might well be tried at Polmont, while, if such control over the home-signal were found to cause a difficulty in getting stopping trains up to the platform, a station down starting-signal, controlled from the junction cabin, might be provided.

I have, &c.,

F. A. Marindin,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

Printed copies of the above Report were sent to the North British and Caledonian Railway Companies on the 26th January.

NORTH-EASTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
October 10th, 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 28th ultimo, the result of my enquiry into the collision that occurred on the 22nd idem at Newcastle Central station on the North-Eastern Railway, on which occasion the 10.10 a.m. train from Carlisle, on arrival at Newcastle at 12 noon, struck the buffer-stops at the end of No. 6 platform line.

Eleven passengers are reported to have complained of shock or of minor injuries.

The train consisted of a six-wheeled compound engine (No. 340), having four wheels coupled, a six-wheeled tender, and 12 vehicles, including two brake-vans and

three empty horse-boxes. The three horse-boxes were between the tender and the front van, the second van being at the tail of the train. All the vehicles had six wheels except the horse-boxes, which had only four wheels each. The engine and train was fitted throughout with the Westinghouse automatic brake, working blocks on four wheels (viz., driving and trailing) of the engine, on all the wheels of the tender and horse-boxes, and on the leading and trailing wheels of each of the six-wheeled coaches and vans.

No damage whatever was done to the engine, train, or permanent-way. The buffer-stops were shifted back two or three inches, and the paving-stones behind them slightly displaced.

Description.

The dock or bay in which this collision occurred is situated at the west end of Newcastle Central station. The bay platform is 172 yards long, but the outer end of it is very narrow, and it is therefore desirable for trains to draw up as near to the buffer-stops as possible, so as to avoid the inconvenience due to want of space at the narrow end of the platform. The station is approached from the west on a rising gradient, which commences 1,031 yards from the buffer-stops, with an inclination of 1 in 103. This gradient increases in severity to 1 in 90 up to a point 333 yards from the stops; it then becomes 1 in 120 for 100 yards, and ultimately changes into a falling gradient, varying from 1 in 400 to 1 in 610 for a length of 233 yards up to the buffer-stops.

It is usual for the trains from Carlisle to run into this dock, and occasionally when a train is standing in the dock it is washed there, the existence of the platform rendering the operation somewhat easier to perform than outside. A train which had arrived earlier in the morning than the one to which the collision occurred had been washed on one side while standing in the dock, and no doubt a good deal of water was thrown upon the rail nearest to the platform.

The distance from the west end of the goods warehouse, where the driver shut off steam, to the end of the dock is 500 yards, while from the junction-signals and from the bridge signals to the same point the distances are 367 yards and 247 yards respectively.

The weight of the train exclusive of engine and tender would be about 130 tons, making a total of 207 tons inclusive. Of this about 158 tons would be carried on braked wheels, 58 wheels out of a total of 78 being provided with brake-blocks.

Evidence.

Jonathan Aspinall, driver, states: I have been in the North-Eastern Railway Company's service 30 years, and I have been 23½ years driver, and for three years I have been passenger driver. I am stationed at Gateshead. I came on duty on the 22nd September at 4.55 a.m., having come off duty between 4 and 5 p.m. on the afternoon of the 21st. My engine was No. 340, six-wheeled compound, having wheels coupled, and a six-wheeled tender. Both engine and tender were fitted with a Westinghouse automatic brake, working blocks on all the wheels of the tender and on the driving and trailing wheels of the engine, and there was a hand-brake on the tender. The weight of engine and tender together is 77 tons, the engine weighing 43 tons and tender 34 tons. I went away from Newcastle with the 6.25 a.m. train to Carlisle, due at Carlisle at 9.5 a.m. The brake was working all right on the way to Carlisle. I left Carlisle on the return journey at 10.10 a.m. Before starting, the Westinghouse brake was tested by the guard, and it was working right. The connections were properly made between the engine and train. I have no doubt that the connections were properly made throughout the train. My train consisted of 12 vehicles including two vans, one at the front of the train, and one at the rear. There were three empty horse-boxes next the engine. I believe they had brakes on the wheels the same as the rest of the train. The train usually consists of nine vehicles. I have worked with this train, or other trains from Carlisle, on and off for three years or nearly so, and I know the road thoroughly well. On the return journey there are eight stops between Carlisle and Newcastle. I had no difficulty whatever in stopping at any of those places, and I did not overrun the platform at any of them. On approaching Newcastle the signals were off for me. I shut off steam at the west end of the goods warehouse, which is about 500 yards from the buffer-stops, the gradient at that point is 1 in 90 rising. We were then two minutes late. We were travelling at about 18 or 20 miles an hour. We cannot go at any great rate because of the gradient. I applied my brake after passing the junction-signals, which are about 380 yards from the buffer-stops, but before reaching the bridge signals. I might have been running between 16 to 18 miles an hour. After applying the brake, I reduced the speed to nearly four miles an hour. Finding I had, as I thought, the train under proper control, I left the brake partly on. When about 30 or 40 yards from the buffer-stops, I applied the brake full on. I was then going about one mile an hour. But the brake did not have the effect it should, and seemed to make no difference to the train. I reversed the engine and gave her steam, but before that had any effect we ran into the buffer-stops. The train was then going at about one mile an hour or a little over. I think that when I applied the brake full on, the engine wheels skidded and the train slid forward. I did not put sand on the rails. It was a fine day and the rails were dry. I do not know whether the rails were damp in the station. The engine generally stops five or six yards from the buffers, but as I had the three empty horse boxes on the front of the train, I drew as close to the buffers as I could, in order to get the tail of the train up to the platform. If I had not wished to draw close up to the buffer, I should have applied my brake full on sooner. I applied my brake outside the station, and shut off steam at the same place as usual. I had over 65 lbs. of air in the brake

when I first applied it; the pump was working, and there was still 65 lbs. when I applied the brake fully. The fireman applied the tender hand-brake as I entered the platform. I was struck by the handle of the pump steam-valve and was stunned for the moment. The engine was not damaged in the least, and went on with its work as usual.

John Maddison, fireman, states: I have been with the North-Eastern Railway Company nine years, of which I have been five years fireman. I came on duty at 4.55 a.m. on the 22nd September, having come off duty at 5 p.m. the previous evening. I have been firing for driver Aspinall for seven or eight months. I corroborate my driver in what he says.

George Hopper, guard, states: I have been in the Company's service 23 years, and I have been assistant guard and guard for about three years. I came on duty at 3.50 a.m. on the 22nd September at Newcastle Central Station, having come off duty about 12.50 p.m. midday on the 21st. I first of all went to Tynemouth and back, and I then joined the 6.25 a.m. train Newcastle to Carlisle. Going to Carlisle the train consisted of nine vehicles. We started back from Carlisle at 10.10 a.m. We had three empty horse-boxes attached to the front of the train, making twelve in all, including two vans, one in front and one behind. The train, including the horse-boxes, was fitted throughout with the Westinghouse brake. I tested the brake before leaving Carlisle, and it was working all right, and the connections were properly made throughout the train. There are eight stops between Carlisle and Newcastle. We pulled up all right at each of them. There was no overrunning the platform. On approaching Newcastle the signals were off for No. 6 platform. I do not know when the driver shut off steam, nor can I say when he applied his Westinghouse brake for the first time. I applied my hand-brake, according to rule, on approaching the station, but I cannot say exactly where. We seemed to be running at the usual speed, but I cannot say how many miles an hour. I know the road well between Carlisle and Newcastle. I thought, as we were entering the platform, that the train was slipping away rather more than usual, but I had no idea that the driver had lost control. I did not expect that he would run into the stops. After the collision occurred my hand-brake was on. I did not know that the train had touched the buffers; I thought it was only a brake stop. My train was not damaged in any way. I was not hurt at all, and no passenger complained to me. The train was fairly full. The rails outside the station were dry. I am sure that the brakes were on the wheels throughout the train. I did not know that we had struck the buffers till about two minutes after we arrived. I was riding in the rear van.

Driver Aspinall recalled, states: I know there is a rule about entering stations with dead ends. I do not exactly know the words of the rule, but I think that it is to the effect that we should enter the station at hand-brake speed. But I do not know of any rule prohibiting the use of the continuous brake. I have a copy of the general rule book, and of the rules for the Westinghouse brake.

John Harding Richardson, goods guard, states: I have been in the Company's service 29 years, and about 17 goods guard. On 22nd September I came on duty at 5.55 a.m., having come off duty at 6.30 p.m. the evening before. I joined the 6.25 a.m. train at Carlisle as assistant guard. I have worked occasionally as assistant passenger guard for eight or nine years. We started back from Carlisle at 10.10 a.m. I was riding in the front van. There were three horse-boxes between my van and the engine. The train was fitted throughout with the Westinghouse brake. It worked properly at all the stops. On approaching Newcastle I saw that the driver shut off steam by the goods warehouse. We were then going about 15 to 20 miles an hour. The driver applied his brake outside the bridge signals, but I cannot exactly say where. The speed was reduced, and at the end of the platform he was travelling about four miles an hour. It was about the usual speed. I applied my hand-brake at the end of the platform, and I do not think the driver released his brake after once applying it. The speed was reduced after entering the station, but I cannot say whether he applied his brake full on half way down the platform. I did not think we should strike the stops until the engine was about 15 yards from them. I did not open the valve in my van, and did not interfere with the Westinghouse brake at all. I knew my van-wheels were skidding at the time, and I think from the way the train was travelling that the rest of the wheels were skidding too. I was looking out of the door window at the time I thought we were likely to strike the stops. My hand-brake was applied before that. I did not notice the rails whether they were wet or dry. One passenger complained to me. It was a full train. I was not thrown down or hurt in any way. When we struck the stops we were going at less than a mile an hour.

Joseph Nesbit, foreman of carriage washers, states: On the morning of the 22nd September the train from Carlisle, due at 10.30 a.m., was washed on one side (the platform side) in No. 6 platform line. After that it was shunted to the Clay hole sidings. The 10.10 from Carlisle is due at 12 noon. The washing of the carriages causes a good deal of water to be lying about, but I cannot speak exactly as to the condition of the rails at the time the 10.10 a.m. train from Carlisle arrived.

Conclusion.

Although the injuries resulting from this collision were trifling, the case is of importance, as I have said on other occasions, because of the frequency with which mishaps of this nature occur. It would be thought that with modern appliances, continuous brakes, powerful engines, and experienced drivers, such collisions would be unknown. But the reverse is the case, and there seems to be only one explanation of the fact. Drivers do not give themselves any margin of safety to fall back on, in case of anything happening which is out of the usual course. Knowing what a powerful instrument they have in the continuous brake, they rely too much on their own judgment to apply that brake at precisely the right moment, and do not sufficiently remember that a slight increase of speed, a wet rail, a high wind, an increase in the weight of the train however small, or any unforeseen incident may upset their calculations and cause the train to run further than was intended. In short, there is a limit to the power of the brake, and if drivers work up to that limit, they must not be surprised if they occasionally make a mistake and go beyond it.

The evidence is this case is perfectly clear. The train approached the station in the usual manner, and steam was shut off about 500 yards from the buffer-stops, the

ascending gradient rendering it necessary to keep steam on up to this point. The driver applied the continuous brake about 280 yards from the stops, shortly before the gradient changes from an ascending one of 1 in 120 to a falling one of 1 in 400. When the train reached the platform, which is 172 yards long, it is said to have been travelling at four miles an hour, the driver still having his continuous brake partly on. When half way down the platform, he applied the brake full on, but according to his statement, the wheels then "skidded" and the train slid forward on the rails, and was still travelling at about one mile an hour when it struck the buffer-stops.

The present rule of the Company as to the speed of trains entering stations has been quoted by me on several pevious occasions. It is to the effect that "Engine-drivers "must always enter such (terminal) statons, or a dead end bay at any station, at such a "speed as to enable them to stop the train at the proper place by the application of the "hand-brake only." Driver Aspinall stated that he understands this to mean that stations are to be entered at hand-brake speed, but not that the hand-brake alone is to be used for stopping the train; and this interpretation has hitherto received the sanction of the Company.

While, therefore, I do not accept the above interpretation of the rule as the correct one, I do not hold driver Aspinall to blame for relying solely upon his continuous-brake for stopping his train after entering the station. But at the same time I cannot avoid the conclusion that he considerably, though perhaps unintentionally, under-estimated the speed at which he entered the station. The fact that with his continuous brake operating on 58 out of the 78 wheels in the train (the braked wheels carrying more than three-quarters of the weight of the train) the driver failed to stop in time, seems to me to be clear proof that he entered the station at greater than "hand-brake" speed. The evidence points to the fact that the speed was no greater than usual, but this only means that the rule as to hand-brake speed is daily infringed, though drivers generally succeed in stopping their trains without touching the buffer-stops. There were, however, three extra vehicles (horse-boxes) on the train in question, which rendered it desirable that the engine should draw up as close as possible to the buffer-stops, for reasons already explained. The driver therefore refrained from fully applying the brake until later than usual, and unfortunately delayed a little too long, the result being that, having left himself no margin of space or power to fall back on in case of miscalculation on his part, the train ran into the stops.

It may be, though I do not lay much stress on the circumstance, that owing to the washing of carriages which had been going on in the dock, the driver's calculations were partly upset by the dampness of one of the rails. If so, it strengthens my argument that drivers should always have something in hand to meet the unforeseen.

The collision was therefore, I consider, due (1) to an error of judgment on the part of the driver in entering the station at a greater speed than authorised by the rules, and (2) to a miscalculation on his part as to the exact place at which to apply fully his continuous brake, so as to enable the train to draw as far as possible up the platform with safety.

He had been on duty for seven hours and five minutes at the time of the occurrence.

Since the date of my enquiry I have been informed by the general manager of the Company that he has issued instructions for a new rule in place of that quoted above, as regards the use of brakes on trains entering terminal stations, which is to be brought into force from the 17th instant. The new rule is as follows:—"The driver of a train "running direct, or backing into a platform with a buffer-stop at the end, or to a "platform where another train is standing, must do so cautiously, and, at a proper "distance from the place where the train has to come to a stand, must test the "continuous brake, and then run forward under the control of the hand-brake only, "not using the continuous brake except in cases of emergency." This prohibition of the use of the continuous brake, except in emergency, when entering stations is in accordance with the recommendations made on several occasions during recent years by the inspecting officers, and it should have the effect, not only of reducing the speed, but of ensuring that the drivers have a reserve of brake-power to fall back on. If the rule is intelligently applied and strictly enforced, buffer-stop collisions should become extremely rare.

I have, &c.,

H. A. YORKE,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

Printed copies of the above Report were sent to the Company on the 26th October.

NORTH-EASTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
9th December 1892.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 2nd ultimo, the result of my enquiry into the circumstances attending a fatal collision which took place on the 2nd ultimo at Manor House signal-cabin, between Otterington and Thirsk stations, on the North-Eastern Railway.

In this case the second portion of the up Scotch express, which left Edinburgh at 11.1 p.m. on the 1st ultimo, Newcastle at 2.38 a.m., and Darlington at 3.39 a.m., when running at full speed between Otterington and Thirsk, came into collision at 4.2 a.m. or 4.3 a.m. with the rear of the 2 a.m. up goods train from Middlesboro' to Starbeck, which had passed Northallerton at 3.38 a.m., and Otterington at 3.47 a.m., and was moving slowly forward, having just started from the up home-signal at Manor House signal-cabin, where it had been kept standing for several minutes.

The goods train consisted of engine and tender, 34 waggons, all but two or three loaded, and rear brake-van; and the express was made up as follows, viz.:—engine and tender, Great-Northern brake-van, East Coast third-class carriage, Pullman car, East Coast composite carriage, brake-van, sleeping carriage, third-class, composite, and third-class carriages, Great-Northern saloon, Great North of Scotland horse-box, Caledonian van, and East Coast brake-van, or 13 vehicles (equal in weight to 15), of which 10 were fitted with the Westinghouse-brake, and the other three with through pipes.

The collision was one of great violence and the result was most disastrous. The brake-van of the goods train and one of the goods waggons were broken to pieces, and two others left the rails; the engine and tender of the express were thrown off the rails and upset on the left-hand side across a siding, lying with their wheels together nearly at right angles to the main line, and fortunately clear of it; the two next vehicles were practically demolished by the body of the Pullman car, which was shot off the bogie frames, and landed partly on the siding and partly on the main line, south of the place where the engine and tender, and the wreckage of the goods van and the two leading vehicles of the express were lying; partly on the wreckage, and on the engine, was the leading composite carriage, and underneath the trailing end of it, and standing foul of the down main line was the sleeping carriage. On the top of these two last-named vehicles was the brake-van, the fifth vehicle in the train, with its leading end telescoped into the top of the composite carriage, and with the leading end of the next third-class carriage driven underneath it; the eighth vehicle, a composite carriage, was telescoped into the third-class carriage in front of it; the ninth, a third-class carriage, and the tenth, a saloon, were off the rails, but the three rear vehicles did not leave the rails.

Nine passengers, all of whom are believed to have been in the leading third-class carriage, were either killed upon the spot or so badly injured that they died within a very short time, and 39 others were injured, some of them seriously. The guard of the goods train was killed, the driver and fireman of the express train were injured, the former very seriously; the conductor, who had fortunately changed at Darlington from the front van to the centre van, was badly shaken, and the guard who was in the rear van was slightly shaken.

The damage to the rolling-stock, of which a full return is appended, was very great, the wreckage of the two leading vehicles, and the 4th, 5th, 6th, and 7th vehicles, and to some extent the 8th vehicle, of the express, and the brake-van of the goods train, with eight of the goods waggons, having been consumed by a fire which broke out near the engine about an hour after the accident.

In the permanent-way 105 yards of the up line were broken up, and the following materials have been used to make good the damage:—210 yards of rails, 142 chairs, 106 cushions, 176 keys, 28 fish-plates, 62 fish-plate bolts, 386 spikes, and 112 sleepers.

This report has been delayed in consequence of the serious injuries to the driver of the express, whose evidence I was unable to take until the 6th instant.

Description.

Manor House block signal-cabin, the scene of this disaster, is 1 mile 30 chains south of Otterington station signal-cabin, 4 miles 73 chains south of Northallerton,

1 mile 18 chains north of Avenue junction signal-cabin, and about 3 miles north of Thirsk station.

It is a small cabin on the east side of the main line, which runs from Otterington quite straight from north to south, on a falling gradient of 1 in 628, and there is only one set of points for a short down siding.

There are distant, home, and starting signals in each direction, and the cabin contains a frame with seven working and three spare levers, four block telegraph instruments, and an ordinary needle instrument for communicating messages.

The up home-signal is 57 yards north of the cabin, on the west side of the line, being upon the same post as the down home-signal, and the actual point of collision was, as near as can be estimated, 35 yards north of the signal, the point where the engine lay after the collision being about 10 yards north of the signal.

The up and down starting-signals are 351 yards south and north of the cabin, and the up distant-signal is 849 yards north of the cabin.

The floor of the cabin is 9 ft. 6 in. above the level of the rails, and the lamp and arm of the up home-signal are respectively 24 ft. 8 in. and 34 ft. 9 in. above this level.

The line is worked upon the absolute block telegraph system under North-Eastern Railway Company's Rules, from which the following are extracts:—

"2. When commencing to signal a train, the 'Call attention' signal must be the first signal given; all signals must be acknowledged by repeating them, and no signal must be considered as understood until it has been correctly repeated to the sending station."

* * * * *

"4. For the purpose of illustrating the course to be adopted, let A, B, and C represent three block signal-cabins, and the process of signalling a train is as follows:—On the approach of a train to cabin A the signalman will 'Call attention' of the signalman at cabin B, and then give the signal 'Be ready,' and the signalman at cabin B, after having, in accordance with Rule 7, ascertained that the line is clear upon which the train is to run, must repeat the signal and peg the needle to 'Line clear.' As soon as the train has passed cabin A the signalman there must give the bell signal 'Train on line,' upon which the signalman at cabin B must acknowledge the signal and unpeg the needle. The signalman at cabin A must then indicate to the signalman at cabin B the kind of train that is approaching by giving the proper dial signal, which the signalman at cabin B must acknowledge by repeating, and having received the intimation that his acknowledgment is correct, by the signalman at cabin A holding the needle over to 'Train on line,' he must peg it in that position, and then 'Call attention' of and give the signal 'Be ready' to the signalman at cabin C. As soon as the train has passed cabin B it must be signalled in a similar manner to the signalman at cabin C, who must forward the signal 'Be ready' to the next cabin, and so on throughout the block. When the train has *passed* the advance signal at cabin B, and is continuing its journey in the next section, or has been shunted clear of the main line, the signalman at cabin B must 'Call attention' of the signalman at cabin A and give the proper signal, indicating that the line is clear of the train, which must be duly acknowledged by the signalman at cabin A."

* * * * *

"5. No train must be allowed to pass or start from any station or junction where the block system is in operation, nor any obstruction of the line be allowed to take place, without the signals having been previously made and acknowledged as herein directed."

"7 (*a*). In dealing with trains of every description, except as provided for in clauses (*b*), (*d*), and (*e*), the line in the rear section must always be kept blocked until the preceding train has either been shunted clear of the main line or has passed the advance-signal, and is continuing its journey in the next section, or, where there is no advance-signal, has passed the home-signal at least 400 yards, or the cabin in advance if within this distance, and is continuing its journey in the next section."

The following are extracts from the Company's book of rules and regulations:—

"90. The signal-boxes at which the block telegraph working is in operation are furnished with instruments to signal for each line of rails, and the system under which these instruments are to be worked, and the mode of indicating the description of approaching trains, will be laid down in the code of regulations supplied to signalmen or exhibited in the signal-boxes for the guidance of the persons in charge."

"91. On those portions of the line worked on the absolute block system a second train or engine must not be allowed to enter a section until the preceding train or engine has been signalled as having passed out of the section, except under the circumstances specified in Rules 100 and 101, to meet cases of train or telegraph failure."

* * * * *

"275A. * * * * * *
In case of detention at a home or starting signal the engine-driver must sound his whistle, and if still detained the guard or fireman must go to the signal-box and remind the signalman of the position of the train or engine, and remain there until the signalman can give permission to go forward. In foggy weather or during falling snow the guard or fireman must, immediately upon the train or engine coming to a stand, proceed to the signal-box.

"The duty must be performed by the guard or fireman in accordance with the following instructions:—

* * * * *

"In the case of a goods train with only one guard, when stopped at the home-signal, by the fireman.

* * * * *

"281. Should an accident to a train foul or be dangerously near to any line of rails used by trains running in the opposite direction, the engine-driver of the disabled train must immediately detach his engine (if it be able to run forward) and proceed with it 1,200 yards from the scene of the accident, and leave his fireman with detonators to act as laid down in Rules 213 and 214 to protect the opposite line of rails. The engine-driver must then go forward to the nearest signal-box and inform the signalman of the obstruction, in order that any train or engine running on the opposite line may be stopped." * * * *

"213. When a train is stopped by an accident or from any cause (except where it is efficiently protected by fixed signals), the guard, if there be only one, or the rear guard, if there be more than one, must immediately go back 1,200 yards to stop any following train." * * * *

Evidence.

George Birch states: I have been about 24 years in the service, and a signalman for about 20 years; at the Northallerton north junction for nearly ten years. On the 1st November I came on duty at 10 p.m. for eight hours, having been off duty for 16 hours. I was informed by telegraph from Newcastle, Ferry Hill, and Darlington, how the second portion of the Scotch express was running. There was above 20 minutes margin between the two portions all the way. I cannot remember the exact interval. The following are the block-signals I received for the two portions of the express, and the Middlesboro' goods train:—

First portion of Express.

"Be ready" received from Castle Hill junction	3.31
Accepted at once.	
"On line" received	3.32
Train passed	3.33
"Line clear" given to Castle Hill junction	3.33
"On line" given to Hutton Wood	3.33
"Line clear" received from Hutton Wood	3.36

Middlesboro' Goods Train.

"Be ready" received from Northallerton low junction	3.20
Signal not accepted until	3.36
"On line" received from Northallerton low junction	3.36
Train passed	3.38
"Line clear" given to Northallerton low junction	3.38
"On line" given to Hutton Wood	3.38
"Line clear" received from Hutton Wood	3.44

Second portion of Express.

"Be ready" received from Castle Hill junction	3.55
Accepted at once.	
"On line" received	3.55
Train passed	3.58
"Line clear" given to Castle Hill junction	3.58
"On line" given to Hutton Wood	3.58
"Line clear" received from Hutton Wood	4.0

At the time I accepted the goods train from the low junction the second portion of the express had not left Darlington. It left Darlington at 3.39, as I was informed by telegraph. The margin which is ordered to be kept at my cabin in the case of ordinary goods trains in front of fast passenger trains is 20 minutes. There were three tail-lights on the goods train burning properly, one light in the centre of the buffer-beam, and two at the sides of the van higher up. It was sometimes rather foggy that night, but not very bad at Northallerton. I could see signal lights over 100 yards off. I could see my up starting-signal light.

2. *Edmund Wright* states: I have been 16 years in the service, and a signalman for seven years; at Hutton Wood for the whole time. On the 1st November I came on duty at 6 p.m. to work till 6 a.m. I had left duty at 6 a.m. There are five working levers in my cabin; four block-instruments, and a speaking instrument. I believe my clock was right. The following are the block-signals recorded

in my book for the two portions of the Scotch express, and the Middlesboro' goods train :—

First portion of Express.

"Be ready" received from Northallerton high junction	3.30	a.m.
"On line" received from Northallerton high junction	3.33	„
Train passed	3.35	„
"Line clear" given back	3.35	„
"On line" given to Otterington	3.35	„
"Line clear" received from Otterington	3.37	„

Goods Train.

Be ready" received from Northallerton north junction	3.33	„
Accepted at once.		
'On line"	3.37	„
Train passed	3.43	„
"Line clear" given back	3.43	„
"On line" given to Otterington	3.43	„
"Line clear" received from Otterington	3.47	„

Second portion of Express.

"Be ready" received from Northallerton north junction	3.55	„
Accepted at once.		
"On line" received	3.57	„
Train passed	3.59	„
"Line clear" given back	3.59	„
"On line" given to Otterington	3.59	„
"Line clear" received from Otterington	4.1	„

It was a foggy night. It was very variable. I did not think it necessary to send for fogmen. I could see my advance-signal light at times, but at times not. I did not notice it was thick till after midnight. A down goods train passed me at 3.33, and another at 3.43. That was the last until 7.15.

3. *Henry Eden* states: I have been 21½ years in the service, and a signalman for about 8½ years; at Otterington since August 1891. On the 1st November I came on duty at 7.15 p.m. to work till 7.25 a.m. The proper hours are from 6 p.m. to 6 a.m., but owing to my mate being on a holiday, and the relief man not being able to get to Otterington earlier, there was a temporary alteration in the hours. I had left duty at 1.25 p.m., on Monday, having been on duty since midnight on Sunday. I should have been relieved at 6 a.m., only there was some mistake about the relief man coming. There are nine working levers, and one spare lever, four block instruments, and a speaking instrument in my cabin. We work absolute block under the ordinary rules. I produce the train record book for my cabin. The following are the signals recorded for the two portions of the Scotch express, and the Middlesboro' and Starbeck goods :—

First Portion of Express.

"Be ready" received from Hutton Wood	3.33	a.m.
Accepted at once.		
"On line" received from Hutton Wood	3.35	„
Train passed	3.37	„
"Line clear" given to Hutton Wood	3.37	„
"On line" given to Manor House	3.37	„
"Line clear" received from Manor House	3.38	„

Goods Train.

"Be ready" received from Hutton Wood	3 38	a.m.
Accepted at once.		
"On line" received from Hutton Wood	3.43	„
Train passed	3.47	„
"Line clear" given to Hutton Wood	3.47	„
"On line" given to Manor House	3.47	„
Line clear" received from Manor House	4.0	„

The last entry is meant for 4.0. The figure 3 in the hour column was put down in anticipation, and, as the signal was not received until 4, I put the 4, and what I mean for a 0 in the minute column.

Second Portion of the Express.

"Be ready" received from Hutton Wood	3.58	a.m.
Accepted at once.		
"On line" received from Hutton Wood	4.0	„
Train passed	4.1	„
"Line clear" given to Hutton Wood	4.1	„
"On line" given to Manor House	4.1	„
"Line clear" received from Manor House	4.3	„

For the three last entries I made the 4 in anticipation, and as I did not enter them until some time after the accident, after I had fetched the platelayers, I made a mistake in the minute column and put 41 instead of 1. I also entered the "Line clear" for the express at 4.3, which is the time it should have been cleared, but it never was cleared. I was rather confused. After I had given the train "On line" to Manor House, but before I entered it, I went to the window to look after it, and then, when going back to book, was called on the speaking instrument from Manor House. The signalman asked me if it was the E.P. that I had put "On line." I answered "Yes." I thought it was strange, and I went to the window wondering what was up with Holmes in asking that question, and I heard the pitch in. It was a violent crash. Holmes called up again on his speaking instrument, and offered me a D.B. message. I ran to the block instrument, and asked him what was amiss. He said, "Tell Mr. Kirby that the express has run into a goods." I told the signalman at Hutton Wood to caution up trains to stop at my cabin, then went to Mr. Kirby, and then went and called the platelayers. It was a thick night but variable. It was too thick for me to see the Manor House up distant-signal light. Some time during the night Holmes had discussed with me whether it was necessary to have out the fogmen, but it got lighter and we did not do so. At the time the accident happened I did not think it was so thick as to require fogmen. I could see the signal lights on my advance-signal 350 yards off. I could see the back light of my home-signal, but not of my distant. I could see the tail light on a passing train. The first portion of the express had two tail lights which indicated to me that there was a second portion to follow. I had no other intimation that the train was running in two partions that night. Holmes had come to my cabin before going to his own cabin at about half-past 7 p.m. He asked me to wire to him if his mother arrived by the later train, and then said, "Harry, I am about done to start duty." He said, "I have never been off my legs since 12 o'clock. "I have had to walk from Northallerton and twice "to Otterington and back." Holmes' mother did arrive by the train at 8.58 p.m., and I wired to Holmes to tell him so. When Holmes was in my cabin he looked tired and upset. Holmes, when he went on duty, said he was done up, but he did not tell me actually that he was unfit for duty. He looked put out. He was just outside my box. I thought he was most troubled about his wife, and it did not strike me that there was any risk on his going to duty. He worked as well as possible up to the time that the second portion of the express passed, taking all the signals at once. A goods train usually takes from three to four minutes in running from my box to Manor House. I did not notice that I had not received the "Line clear" signal for the goods train until the second portion of the express had been offered to me. I was sitting down by the fire reading. If I had noticed that the goods train had been so long away I would probably have rung up to ask about it. According to our block regulations it is right to offer the "Be ready" for a

second train before the train out of section-signal, or the "Line clear" signal as we call it, for the preceding train has been received. I offered the "Be ready" for the second portion of the express at 4 p.m. I got back the attention-signal, then the "Line clear" signal, and then the acceptance of the "Be ready," and I lowered my signals for the train. All the block-signals were given in a proper manner and acknowledged at once. I had just gone across the cabin to book the train when I got the message from Holmes to ask whether the train was the E.P. Holmes offered me the message on the speaking instrument, but I took it on the block instrument. The reason I did so was that I knew something was amiss, and thought it was the quickest way to find out. Manor House is closed on Sundays. I think my clock was correct that night. I think that about 90 to 100 trains pass my box on the up and down lines.

4. *James Holmes* states: I have been about 11 years in the service, and a signalman for the whole time; at Manor House for 15 months. On the 1st November I came on duty at 8 p.m. to work till 6 a.m. on the 2nd November. I had gone off duty at 6 a.m. on the 1st November after 12 hours' work. I had arranged with my mate to work until 8 p.m. on the 1st November, with the consent of the station-master at Otterington. There are seven working and three spare levers in my cabin, four block instruments, and a speaking instrument. We work absolute block in both directions under the ordinary rules. I believe the clock in my cabin was correct. It is, as a rule, corrected every morning at 10 a.m. I produce the train record book for my cabin. The following are the block-signals recorded for the first portion of the up Scotch express :—

"Be ready" received from Otterington at - - - - - -	3.35 a.m
Accepted at once.	
"On line" received from Otterington at - - - - - -	3.37 „
Train passed - - - - -	3.38 „
"Line clear" given back - - -	3.38 „
"On line" sent to Avenue junction -	3.38 „
"Line clear" from Avenue junction not recorded.	

The "Be ready" would have been sent forward as soon as I received the "Train on line" from Otterington. The "On line" signal sent to Avenue junction at 3.38 a.m. is the last signal recorded in the book. I saw the train passing and it had a double tail-light on. That intimated to me that there was a second portion running. That was the only intimation I had. At the busy season of the year this train often runs in two portions. I remember soon after the train passed getting the "Be ready" for an up goods train in the usual way, and I accepted it. The signals had been put to danger behind the first portion of the Scotch express, and I did not lower them for the goods train. I did not signal forward the goods train. After that I must have been overpowered by sleep, and I do not remember the arrival of the goods train, or anything else, until I got the "Attention" signal and the "Be ready" from Otterington for the second portion of the express. I only got it once, I believe, and I gave the "Line clear" signal back, thinking I had omitted to give it for the first portion of the Scotch express, and then accepted the "Be ready." I then lowered my signals, home, distant, and starting. The goods train, which had been standing at my home-signal took this signal and started. I heard no whistle from this train either before or after it started. For a moment I seemed powerless to do anything, but as soon as I could collect myself I asked the signalman at Otterington, on the block instrument, "Is this the second portion "of the express?" He replied, "Yes." I had thrown my home and distant signals to danger just before I asked this question, but it was too late. I would like to say something in explanation for the state I was in. On Monday 31st October, not having been on duty on the previous day, I got up at about 9 a.m., and I worked in my orchard pulling apples for the market, and did not go to-bed during the day, as I usually do when going upon night duty. I went on duty at 6 p.m., the usual time, and did not feel at all fatigued, but went through my duty in the usual way. I came off duty at 6 a.m., and got home at about 7.15 a.m. I live about 2½ miles from the cabin, and when on night duty I usually wait for the Avenue junction signalman, who lives near me, and we walk home together. On reaching home my wife had not got the fire lighted, so I lighted it myself. While I was doing this my wife said to me, "I do not think "our Rosy is very well this morning," and that "she seemed to be breathing rather hard." I said, "Probably she has a little cold, leave her in bed with "me, and I will go to-bed and have a good day's "rest." I said, "Get Teddy off to school and do "what is necessary for the other children, and then "you may get me a little breakfast if you like." She brought me a cup of tea, and something to eat, at about quarter-past 9, I think. I then looked at the child. She seemed to be sleeping all right, and I said she might leave her a little longer. She came again about a quarter to 12 to fetch down the child to wash and dress her, and said that as she had not heard it cry or anything she thought it was all right. She took the child away and did not disturb me in the least when doing so. The next I remember was my wife calling out "Jim, Jim, I believe this child is in a fit." I jumped out of bed at once to see what was the matter, and told my wife to run for a neighbour who had more experience. She came, and told me to go for a doctor, which I did. I first went to Otterington station, about a mile, and got a lift on a Darlington goods train to Northallerton. When I got to the doctor's house the servant told me that he was out. She asked my name and where I resided. On hearing from me where I lived she said that the doctor had gone round by Enderby, and would then go round by Otterington to Thornton-le-Moor, where I live. I said, "Then they would probably call him in "if they saw him passing, but that at any rate I "would walk home so that I might perhaps meet "him." The distance is about 4½ miles. I did not meet him, but he telegraphed later to ask me if I had got another doctor, and I answered that when I got home I found the child was dead. It was about 12 o'clock when I started from home, and I got home at about 2 p.m. After I got home and heard that the child had died, my wife said she really could not stop alone that night, and I said I would telegraph for my mother, but that really I was not fit for duty that night, and would try to get relief. I had to pass the station on my way to the telegraph office, and I went to see Mr. Kirby, the station-master at Otterington, under whose orders I work. I said to him, "I have "had a child die very suddenly. Will you wire to "Mr. Pick (the signal inspector) to see if I can be "relieved for the night?" as I knew that I was not fit for duty. He said he would try what he could, and that I had better come up at the usual time for duty, and see what the reply was about the relief. I went about 6 p.m. to the station expecting to meet my mother on arrival from York, and when I got there I asked Mr. Kirby what the reply was. He said that Mr. Pick had replied that he regretted he could not relieve me that night. On hearing this I went into Otterington cabin, and wired to my mate at Manor House, telling him the circumstances of the case, and asking him if he could stop on a short time. He said I was not to put myself out, or to hurry myself. I replied I would come as soon as I could. I went home and told my wife that my mother had not come, and that she had better get a neighbour to be with her during the night, that I would take what refreshment I wanted, and would then go to the station to see if my mother had come by the slow train, and would then go on duty. My mother did not come by that train and I asked the Otterington signalman

to wire to me if she came by a later train. I said I would then go to duty although I was not fit for it. I arrived at the cabin at about 8 p.m. I did my work quite well until the first portion of the express passed and was priding myself on keeping up, and then I seemed to become confused all at once. I did not feel inclined to eat before going to the cabin, but after I got there I did eat something. All the drink I had had during the day, except tea, was a glass of beer in Northallerton when on my way home at about 1 p.m. It was very thick at the time of the accident. If it had not been I would have seen the engine of the goods train standing at my home-signal when I looked out before lowering the signal for the second portion of the express. As far as I can recollect, I sent the "Be ready" signal for the second part of the express to Avenue junction as soon as I received it from Otterington. It is the rule to forward this signal as soon as received for up express passenger trains, on account of the short section from Otterington to Manor House. The "Be ready" was accepted by Avenue junction at once, and before I lowered my signals for the express.

5. *Thomas Gibson* states: I have been between 15 and 16 years in the service as a signalman, and at Avenue junction for 13 years. On the 1st November I came on duty at 20 minutes to 6, to work till 6 a.m. I came voluntarily on a little before my proper time, which is 6 p.m. I had been off duty for 12 hours. There are in my cabin 13 working levers, four block instruments, speaking instruments, and telephone to Thirsk. We work absolute block system on the main line. The following are extracts from my train record book for the first portion of the Scotch express :—

"Be ready" received from Manor House - - - - -	3·36 a.m.
Accepted at once.	
"On line" received from Manor House	3.39 „
Train passed - - - - - -	3.40 „
"Line clear" given to Manor House	3.40 „
"On line" given to Thirsk north junction - - - - -	3.40 „
"Line clear" received from Thirsk north junction - - - -	3.41 „

My clock was right. I got no signals at all for the goods train. The only signal I got for the second portion of the Scotch express was the "Be ready" at 4 a.m., which I accepted at once, pegging my needle over to "Line clear." The Scotch express was running late, being due to pass Thirsk at 3 a.m. The goods train was, I believe, running at about right time. If there is sufficient margin between the two portions of the Scotch express, it is usual to let the goods come forward, as it runs into the independent line at my cabin. There are no sidings long enough for a long goods train at Manor House or Otterington. It was rather foggy at times that night, but I could see my advance-signal lights. I did not think it was so thick that there was a necessity for fogmen to be out. The last down train passed my box at 3.32 a.m., and I received "Line clear" for it from Manor House at 3.36 a.m.

6. *Thomas Kirby* states: I have been about 26 years in the service, and station-master at Otterington for 4½ years. On the 1st November, signalman Holmes, who was on night duty at Manor House, came to me shortly after 2 p.m. and said, "Mr. "Kirby, I want you to telegraph to Mr. Pick to ask "him if he can relieve me to-night." I saw he looked out of sorts, and I said, "What's amiss Holmes?" He said, "My baby has died suddenly in a fit." I said, "Has it been ill long?" and he said that it had been a little amiss, but they had not thought much about it. He gave more particulars about the illness. On that morning, he said, his wife had left the baby in bed with him, and had found it in a fit about 12 o'clock. I told him I would telegraph for a relief, but I was afraid they might be all engaged with such short notice. I telegraphed to Mr. Pick, who is the signal inspector, "Can you "send relief to Manor House to-night? Holmes' "child dead." Holmes had told me that he felt in "bad fettle" for duty; but I did not wire to Mr. Pick to that effect, but only that Holmes' child was dead. Holmes said he would be down again at about 6 p.m., and that perhaps I could have a reply by then. He came shortly before 6, and I told him the reply I had got—which was, "Cannot relieve Holmes to-night." He said, "It's a bad job. I shouldn't care so much "for myself, but I am most bothered about my wife, "as she is not fit to be left all night by herself. I "have sent for my mother, and I will wait and see if "she comes by this train, and if she doesn't, I'll go "back and get some of the neighbours to stay with "my wife, and then come and meet the half-past 7 "train, and go from it to duty; but I'll ask Creed "(his mate) to remain on duty till 8 p.m. to allow "me to do this." I agreed to this as I thought it would assist Holmes. He was distressed about his child, but I did not think he looked unfit for duty. I got the answer from Mr. Pick at about 4.40 p.m. Holmes has been steady since he has been with me. I did not see him after the train arrived at 7.37, but his mother did not come by that train. I looked after her when she arrived at 8.58, and gave orders for signalman Eden to let Holmes know she had arrived and had gone to his house. On the first occasion when Holmes came to me at 2 p.m., he said to me, after asking me to telegraph to Mr. Pick, that "he did not feel fit for duty," and then I asked him what was amiss with him. It was on the second occasion that he came at 20 minutes to 6 that he said he felt in "bad fettle." My staff at Otterington station consists of two clerks and two porters, and two signalmen working alternately at the cabin. There was no one I could have sent qualified to take Holmes' duty. At 6 p.m. there was one clerk and two porters on duty, and one porter had to leave immediately, as he had been on duty since 6 a.m. If I had thought it necessary to switch out Manor House, I would have been justified in taking the responsibility of doing so. If I had thought Holmes was incapable of doing his duty I would have done so. I thought from his manner that he was more troubled about his family than about himself, and I took particular care that he should be informed that his mother had arrived so as to relieve his mind. I got to the scene of the accident at about half-past 4. I went on the engine of an up goods train which had followed the second portion of the express, and had arrived at Otterington at about 4.20. We had to go slowly on account of the fog. It was not a dense standing fog, but seemed to pass in waves. Before I started I could see the up advance-signal from the cabin at Otterington. As we got further along the road the fog got thicker, and I do not think we could see the signal lights for above 100 yards. I took the ganger and three platelayers with me. I went straight to the signal-cabin to see that all was made secure, and learnt that the guard had gone to Avenue junction to block the line. I then came along the down line side of the wreckage. I found two injured people laid alongside the line. I attended to these two. I then searched the wreckage all along that side, and saw the guard's body and two others dead under the Pullman car. I went round the other side and saw two injured and one dead person by the side of the hedge. I went and got the platelayers, who had been at work at the luggage, and we removed these persons into the field, and we got cushions and beds from the sleeping car. Guard Bean was assisting me. I saw no fire break out until after half-past 5. I made inquiry as to whether there was any water to be got, and was told by some of the farm people who had arrived that there was a pond near. I knew there was a water main passing near, but did not know exactly where it was. Holmes did not tell me that he had not been in bed on Monday.

7. *Thomas Pick* states: I have been 19 years in the service of the company, and am district inspector in the traffic department. The line between York and Northallerton is part of my district, and I am directly in charge of the signalmen in that district. On the 1st November a telegram to the following effect was received at my office at York at 2.47 p.m. from Mr. Kirby. "Can you send relief to Manor House cabin to-night, Holmes' child dead." I was away on duty on the Scarboro' line, and my assistant E. L. Harland sent an answer at 4.35, as follows:— "Cannot relieve Holmes to-night." On my return to the office at 5.45 Harland had gone, but I found the copies of the messages on my desk. I looked over my list of relief signalmen, and saw that I had not a man to send, unless I had sent a man who had been on duty. I therefore did nothing further, except that I came back to the station at about 7.30, expecting that if Holmes wanted to say anything further I would have been communicated with. Supposing I had received a telegram that the man was unfit for duty, I would have done the best I could under the circumstances. There were men who had only recently come off duty, and who might have been sent if it had been absolutely necessary, but they would not have had a proper amount of rest. There was exceptional pressure on the signalling department at that time, for, owing to a bridge having been washed down near Temple Hirst, there were five men specially employed there. There are 356 signalmen in the York, and in addition 17 relief signalmen. In ordinary circumstances I have found that to be a sufficient proportion of relief men. I find there are 283 signalmen altogether in the York district, and in addition 17 relief signalmen. They were employed on that day as shown on the return I hand in (*see* Appendix). I have never before had any difficulty in affording relief to a signalman. Even although I did not know that Holmes had stated he was unfit for duty, I would have relieved him if I had had a man available, on hearing that he had lost his child. I have done so before on similar occasions. In an extreme case a station-master would be justified on switching out a cabin, but I would only do it myself in an exceptional case. I do not think it is at all a good thing to switch a cabin out without notice if it can be avoided. I should mention that only last week a signalman told me he had on his own responsibility once switched out his cabin, as he did not feel well enough to carry on the work, and that after the matter had been inquired into he was told that he had done quite right. He did not tell me how long ago this was. I would not find fault with a man for doing this, if he could show me that he had good reason for it.

8. *George Bean* states: I have been about 14 years in the service, and a guard for about five years. On the 1st November I came on duty at 6 p.m., worked the 6.25 p.m. train to Doncaster, the 8.15 Doncaster to York, and then the 10.25 York to Newcastle, arriving at 12.33. I was told there that I had to take charge of the second portion of the 10.30 express Edinburgh train, the first portion of which is due to leave Newcastle at 1.42 a.m. The second portion arrived at Newcastle at about 2.30 a.m., and started at 2.38 a.m. It was made up a follows:— Engine and tender, Great Northern brake-van, East Coast third-class, Pullman sleeping car, East Coast composite, East Coast brake-van, East Coast sleeping carriage, East Coast composite, two East Coast third-class, Great Northern saloon, Great North of Scotland horse-box, Caledonian brake-van, and East Coast brake-van on which I was riding. The conductor was in the front van from Newcastle to Darlington, and then he changed into the middle van. The whole train was fitted with the Westinghouse brake, except the Great Northern brake-van, and the Great Northern saloon, which had only the through pipes. The brake was in good order. We stopped at Darlington only. I had no warning whatever of the collision. It was a misty morning, and I cannot speak as to the position of the signals at Otterington or Manor House. I was just getting up off my seat when some barrels of fish were thrown violently across the van, and jammed me against the door. I was not injured, but a little shaken. There was no application of the brake before the collision. I got out as soon as I could, but was a little dazed. The three rear vehicles of the train were still on the rails, but all the others were off. I got back into the van again for my lamp which had been put out. I relit it, and took my signals, and ran forward as fast as I could to the signal cabin. Just as I got there I met the signalman coming down the steps. I said, "Oh, dear! what have you done?" The only answer I could get from him was, "I have a child dead in the house. "Had I been relieved as I asked to be this would "not have occurred." I asked him if he had blocked both lines, and he said he had already done so. After seeing that the home-signal was at danger I went forward to Avenue junction cabin. I saw that the down mail had been stopped there. I asked the guard of the down mail if he would protect his train, and then went and told the signalman what had occurred, and asked him to telephone to Thirsk for medical aid and assistance. I stayed in the cabin till he had done so. I then came back to my own train with the Leeds guard out of the down mail. The accident happened at about 4.3 a.m., and I did not get back to my train till about a quarter or ten minutes to 5. The fire commenced when I was about 40 or 50 yards away from the wreckage. It commenced at the engine. The engine and tender were both upset on their left sides. The two leading vehicles were smashed to atoms; the Pullman car was some distance south of the engine, the body being separated from the bogie frames, and resting partly upon the wreckage of the van and leading carriages. None of the carriages behind the Pullman were upset, but some of them were telescoped, the middle van being completely telescoped into the composite next to the Pullman. It was rather a heavy train. Most or all of the people who were killed were either in the front third-class carriage or in the composite next to the Pullman. I think the fire began in the East Coast van. The relief train arrived, I believe, at about 5.40 a.m. I did not go away with it. I helped the passengers into it. There was no water at hand to put out the fire when it first commenced, and, I think, about six carriages were burnt. The rear carriages were drawn back clear. I left duty on Monday at 9 p.m., and remained off till 6 p.m. the following day.

Richard Wimpress states: I am conductor in the East Coast service, and have been over 26 years in railway service. I was conductor of the 2nd portion of the 10.30 p.m. train from Edinburgh on the 1st November. It started at 11.2 p.m., which was 32 minutes late. We left Newcastle at 2.38 a.m., which was 56 minutes late. We lost six minutes before Berwick by signals, were 11 minutes over time at Berwick, and lost eight minutes by signals between Berwick and Newcastle, where it was very foggy at places. The fog was bad at Durham. After leaving Northallerton it was hazy, but there was not a fog. From Newcastle to Darlington I was in the front van, but at Darlington I changed into the Aberdeen van to get the luggage ready for York. I did not see the signals at Otterington or Manor House as it was frosty and steam was beating down. I had no warning of the collision. It threw me about, and I was bruised by luggage falling on me. I think I was unable to get out for about 10 minutes or so. The gas was put out by the collision. As soon as I got out I went to the signal-cabin. I went into the cabin, and I ascertained that the signalman had blocked the line in both directions. He was very much distressed and I did not question him at all. I got some oil to trim my lamp, and then went to Avenue junction to ask the signalman to send for assistance. After doing this I came back to the scene of the collision, getting

there about three-quarters of an hour after the collision, or a little more. When I got back the fire had commenced. It commenced on the top of the fire-box of the engine, and I think it was the wreckage of the two front vehicles which was lying there and caught fire. By that time several of the bodies had been taken out. There was one child who could not be got at, who was lying below the wreckage which was on fire. I gave all the assistance I could. I think it was about 8 a.m. when the special, which came to take the passengers away, started back to Thirsk. When I got back from Avenue junction, the Aberdeen van in which I had been riding, was not yet burning, nor was the East Coast composite. It was some time afterwards before the fire reached them. I came on duty at 9.45 p.m., having left duty at 9.15 a.m., and was due in London at 8 a.m.

10. *Andrew Baillie* states: I have been in railway service for 23 years, but am a servant of the Pullman Company. I was conductor in charge of the sleeping car "India" on the second portion of the up Scotch express on the night of the 1st–2nd November. I had no warning of the collision. I was in the smoking compartment, but not asleep. I was slightly bruised, but not hurt to speak of. We were running at full speed, 50 or 60 miles an hour, and there was a sudden crash. The Pullman car dashed right through the two carriages in front of it, the engine and tender turning off to the left. The roof of the carriage in front of the Pullman came right into the front of the Pullman, breaking down the partitions as far as the second berths. All the lower berths of the car were full. I called out to the passengers to find out if all were there, and after lighting the lamps I counted them and found all were safe. I then got through a window, went to the signal-cabin, and found that the line had been blocked, and then went back to assist in the best way I could, getting mattresses and pillows from the car, and spirit flasks from the passengers. I then walked round the train, and when coming back from the rear I found the driver of our train lying amongst the coals. He was perfectly composed, and said that his leg was broken. I got a mattress and put him on it, and covered him with blankets, and then he told us to go and look after the passengers. I did not see the fireman, but the driver stated that he had gone back to the rear. The fire broke out in the wreckage on the engine, the wreckage, I think, of the first two vehicles, as I was trying to get out the body of a lady who was, I think, dead. This was the only body I saw under the wreckage, but we heard the cries of a child who was below the woman. I think all the other bodies had been got out by that time. The fire did not commence until nearly an hour after the collision. The Pullman car was off its bogie frames, and the body was down on the rails. I saw a child got out. When I heard its cries the wreckage above and below it was not on fire.

11. *Joseph Barnes* states; I have been 33 years in the service and a driver for 23 years. On the 2nd November I came on duty at Middlesboro' at 1 a.m., to work for 10 hours. I had left duty at 11 a.m. on the 1st November. My engine No. 148 is a six-wheel coupled goods engine, with six-wheeled tender. There are hand-brakes on both engine and tender. I was attached to the 2.0 a.m. up goods train from Middlesboro' to Starbeck. I started at right time. I had to pick up at Welbury. When we left Welbury I had on 35 waggons, all but two or three loaded, and one goods brake-van in rear, in which my guard George Petch was riding. After leaving Welbury we stopped first at Northallerton lower yard. We stopped there for about ten minutes, and then proceeded. We had clear signals at Northallerton station, Hutton Wood, and Otterington. The Manor House up distant-signal was standing at danger. I applied my brakes, and came slowly forward to the home-signal which was also at danger. I came to a stand at this signal. As near as I can judge I stood there for four or five minutes. The signal was then lowered and I started. I think I was running at about six miles an hour, and that about half my train had passed the signal-cabin at Manor House when I felt the collision. The shock was not severe upon the engine, but I felt that something had come into us. The shock shoved us ahead. I ran forward and stopped at the advance-signal. I then got off, and went back to the back end of the train, and saw that the Scotch express had run into my train. My brake-van, and I believe one waggon were broken to pieces, but only one other waggon, and one pair of wheels of a third had left the rails. Some of the couplings had been broken. My guard was killed, but neither I nor my fireman was hurt. The engine and the tender of the express were upset on the left-hand side of the line. The Pullman car was south of the engine, and I think that the body was off the bogie frames. I went to the signalman and asked if he had blocked the road, and he said that he had. He was on the landing outside his cabin. I then went back to the engine. I reckon that my speed on passing Manor House distant-signal was about 20 miles an hour, which speed was gradually reduced. I saw the signal when about 30 yards from it, and I at once shut off steam and applied the brakes. I did not sound my whistle when standing at the home-signal. I did not think we were standing an unusually long time. I did not see the first portion of the Scotch express pass Northallerton, and did not know how it was running. I did not know whether my guard left his van while we were standing. I did not go to the signal-cabin, nor did my mate. We were close to it. It was, I daresay, about five minutes after I came to a stand at the advance-signal that I went back to the point of collision. None of the carriages were then on fire, and the fire had not commenced when I went back to the engine. I came back a second time, and the fire had not commenced then. I went to help the passengers, and remained there for 2 hours 40 minutes. As near as I can judge the fire did not commence until three-quarters of an hour or one hour after the accident. It started from the wreckage on the engine, and gradually extended northwards. There were, I think, two people under the wreckage who could not be got out before the fire reached them, but I believe they were already dead. I left just after a relief train arrived, and went on to Thirsk. It was a foggy night. It was not a thick fog, but I have seen fog-men out on a night better than that. I could see the signal-cabin at Manor House from where I was standing at the home-signal, but I did not see the signal-man. When I was passing the cabin I saw the signalman. He called out and asked me if the distant-signal was on. I said, "Yes," meaning when I passed it. I had one white head-light on my engine; it was burning properly. I stopped close up to the home-signal at Manor House. I could see the cabin plainly from where I stood. I did not think it was so foggy that I ought to have sent my fireman to the signal-box, according to Rule 275A. I did not look at my watch while I was standing, but I did not think I was detained an unusual time. It is not customary for us to whistle unless we are stopped for an unusual time, which was not the case upon this occasion. I do not think that signal-lights, or tail-lights, were at the time visible for over 30 or 40 yards. At the time the tail of my train was struck the advance starting-signal at Manor House was not visible to me. I saw it just after we were struck.

12. *John William Fenna* states: I have been over five years in the service, and about a year a fireman. On the 2nd November I was firing for driver Barnes. I have heard my driver's evidence, and it is correct so far as I know, except that I estimate our speed at the Manor House distant-signal at about 30 miles an hour. When my driver came back to the engine, after going to the scene of the collision, he

sent me forward to Avenue junction to see if the line was properly blocked. The conductor and the guard of the express had gone just before me. I found a down passenger train had been brought to a stand, and that the line was blocked. I went back to my engine and looked to her, and then went back to the wreck and gave assistance. When I got back from Avenue junction the fire was just starting. I heard the guard say that that was just about an hour after the collision.

13. *William Weighall* states: I am a ganger of permanent-way, in charge of the length at which the accident happened. I live near the station at Otterington. I was called at about 4.45 on the morning of the 2nd November, and went at once to the scene of the accident. I found that 105 yards of the up line was broken up. From what I could see I should think that the tail of the goods train was struck 50 yards or more outside the home-signal. When I got there the train was on fire.

14. *John Bradford Harper* states: I am station-master at York. I was called at 4.50 a.m. on the 2nd instant and informed of the accident. I went with a special which left York at about 5.30, taking doctors and ambulance men with appliances. We got to Thirsk north junction at 6.18, and had to wait there for the pilot-man. We got to Manor House about 6.50. Six of the bodies had then been removed from the wreckage. The wreckage of the leading van, a third-class carriage, and a goods waggon were immediately behind the body of the Pullman, which was off its wheels and a little south of the engine. Partly on the engine and on the wreckage was a composite carriage, and underneath the north end of the composite and standing foul of the down main line was a sleeping carriage. Sitting on the top of the two was the Aberdeen van, the leading end of this van being telescoped into the top of the composite. The next vehicle was a third-class carriage with the leading end driven up underneath the van, and the next was a composite carriage which had telescoped with this third-class carriage. The next was a third-class carriage off the rails, and then a saloon off the rails, and the next three were on the rails. When I arrived the wreckage of two leading vehicles and the waggon were well on fire, and so was the composite which was on them and the engine, and the Aberdeen van was just taking fire at the leading end. I set my men to search the carriages which were not on fire. They were gradually driven back by the flames. We found no passengers in these carriages, but some dogs in the Aberdeen van could not be got out. We found two dead bodies under the leading end of the Pullman. The child had been got out before I got there. The train I brought went away with the passengers at about 7.30. They had to be collected from the cottages and farms. They came to Thirsk, where some had already arrived. They all went south in the train at about 8 a.m., and by a special to London from York at 9.15. The breakdown trains from Darlington and York arrived soon after I did.

15. *Luke Welch* states: I am station-master at Thirsk. I was called to the scene of the accident at about 4.20, and got there at 5.40. I had been occupied in making arrangements for taking the passengers away. I made up a special of a carriage and van, and took down as many people as I could to assist. When I got there I found the train was on fire, but only about two carriages were alight at that time. I saw a child got out from the wreckage, which was partially on fire. She was alive, but was rather badly burnt on the feet and legs. She was apparently insensible, and was taken back to Thirsk in my train. I am told she died on the way. The passengers, or as many of them who would come, were brought back to Thirsk in the down mail, which had been stopped at Avenue junction. The down mail went north by another route. I do not know how the up passengers were taken forward.

16. *Roland Ewart*, states: I have been nearly 18 years in the service, and a driver for eight years. I am well acquainted with all the line between Berwick and York. On the 1st November I came on duty at Gateshead at 10 p.m. to work till 8 a.m. I had left duty at 9 o'clock in the morning of that day. My engine, No. 178, is a tender-engine with six wheels, the driving and trailing wheels being coupled. The tender has six wheels. The engine is fitted with a Westinghouse brake, working blocks on the four coupled engine wheels, and on the six tender wheels. I left Newcastle at 2.38 a.m. with the second portion of the up Scotch express. There were 13 vehicles in the train, equal to 15. The Westinghouse brake was working throughout the train, 10 of the vehicles being fitted with the Westinghouse brake, and the others with through pipes. The brake was properly tested before starting and it was in good order. I used it to slack the train at Durham and Thinford junction, where I nearly brought the train to a stand, and at Darlington where we stopped, and it acted properly. We left Darlington at 3.39 a.m. and the signals being right all the way, after that I did not use the brake again. I was running with a pressure of 65 lbs. as shown on the brake-gauge. The weather was very thick from Newcastle to Durham, but the signals as far as Darlington were clearly visible for 50 yards. After Darlington it was pretty clear till Dalton junction, and the signals were visible for about 150 yards. It then got rather thick to about Danby Whisk. It then cleared up again a little, and it was pretty clear at Northallerton where I had no difficulty in seeing the signals 200 or 300 yards off. After passing Northallerton it came on very thick, thicker than we had had it all through the journey. The signals at Hutton Wood were not visible to me until I was within 20 or 30 yards of them. They were off. The Otterington signals were all off, when I sighted at about 20 or 30 yards distance. The Manor House up distant-signal was off. I sighted that when about 20 or 30 yards from it. I passed this signal at my usual speed which would be 55 miles an hour, or perhaps a little more. I was doing my best to keep time, which I was nearly doing. I expected to have lost about 1½ minutes or two minutes when passing Thirsk. I was looking up and a-head for the Manor House up home-signal, but I did not see it. My proper side is the right side. The distant-signal is on the left side, and I had gone to that side to look for it, and I then crossed to my own side to look for the home-signal. While I was looking for it I caught sight of three red lights on the line ahead of me, not above 20 or 30 yards off. I was looking over the side of the engine, outside the cab, and I had no time even to shut off steam or to get to my brake-handle before I was knocked over against the tender. I do not remember how I was thrown from my engine, but when I came to myself I was lying in the field outside the fence of the line, three or four yards south of the home-signal and five or six yards inside the field. I do not know where the engine was, or in what position it was lying, but I could hear the steam escaping. I saw the fire commence some time after the accident, perhaps half-an-hour or more. It commenced quite gradually like the flicker of a candle, and I could have put it out quite easily if I had been able to get to it. The first man who came to my assistance was the Pullman car conductor. He came before the fire commenced. He gave me a little brandy, and I told him to go and look after the passengers. Some time after that he brought me some cushions and moved me further back into the field. The guard Bean came to me some time afterwards, and one gentleman came with him. At that time the fire was burning strongly. Several people had come to look at me, and I had told them they could do me no good, and they had better go and

assist others. The fire commenced nearly opposite to me, but on the other side of the line. I had the idea that the fire had commenced from the stove in the goods-van. I cannot estimate how far the engine ran after striking the goods train before it turned over. The fog was varying and lifting at times, so that I would not have expected to find fog men out. When I came to myself, after being thrown from the engine, I could see the arm of the Manor House up home-signal. It was still off, and I saw it go to danger. I did not know what train it was I had struck until I was told. I thought at first it was the first portion of the express. My fireman was looking out for signals at Otterington, but after passing Otterington he was attending to the fire and to the injector. Manor House is switched out on Sundays, but I have never known it switched out at other times. I have never known a box switched out except in regular course. When a box is switched out the lights are extinguished, except at junctions. The fog that night was so thick that I would have considered it to be my duty to send to the signal-box if I had been stopped at the home-signal, unless I could see the signalman. I could see the windows of the signal-box from where I was lying.

17. *Edward Head* states: I have been about seven years in the service and 2½ years a fireman. I am a spare fireman and work where required. I have not very often run from Newcastle to York, but only when the Scotch express is divided, or with specials. On the 1st November I was fireman with driver Roland Ewart, and came on duty with him at Gateshead. I had left duty at 8·30 a.m. on the 1st November. It was very foggy all the way from Newcastle to Manor House. Occasionally it was awfully thick, so thick that the signals were not visible until we were close underneath them. I cannot say where it was thickest, because I did not often look up for the signals, being otherwise engaged. I was firing nearly all the way and keeping up steam. I did not see the signals at Northallerton as I was firing. I saw none of them. It is part of my duty to look after signals, but when I am otherwise engaged I cannot do so. I have a rule book. I do not know Rule 284. I have read the rules and know that "the "engine driver must, as far as practicable, have his "fireman disengaged when approaching or passing a "station or junction, so that he also may keep a "good look out for signals." I did not look out for the signal at Hutton Wood or Otterington, nor did I see them. I did not see either the up home or the up distant-signal at Manor House. I did not see the tail lights of the train which we struck. I did not hear or see anything unusual until we struck the other train. I was on my proper side of the foot-plate, the left side, with one foot on the tender and the other on the engine. I had been firing and was just lifting my back after using the shovel. I do not know how I was thrown off the engine, but when I gathered myself up, I was lying on my back inside the railway fence near the Pullman car, south of the engine. I was able to get up. I went at once of my own accord back towards Otterington. I went to protect the train. I was not able to get as far as Otterington. I went to a farm-house near the line. I do not know quite how far I had gone. Perhaps an hour afterwards I was taken back by Mr. Kirby to the signal-cabin at Otterington, and then to Mr. Kirby's house. I was moved the same day to the hospital at Northallerton, where I remained for about 15 days. I am still feeling a pain in my back. I think the speed of the train at the time the accident happened was between 50 and 60 miles an hour. As I was walking back towards Otterington I did not look at the up signals. I looked at the down signals. They were at danger. I could see them plainly. I could not say the exact distance I walked after starting for Otterington before I saw the down signal, but perhaps 500 yards. The signal was then about 12 yards from me. I did not look to see if I could see Manor House cabin from where I was lying. From where I was lying the carriages and Pullman car hid the Manor House up home-signal from me.

18. *Joseph Head* states: I am in the locomotive department of the North-Eastern Railway Company, and have charge of the brakes and gas apparatus upon the carriage stock. I hand in a statement (*see* Appendix) showing the class of gas fittings, the dimensions of the reservoirs, the pressure in each when the train left Newcastle, and the probable pressure at the time of the accident. Pope's reservoirs, when fully charged, are charged at a pressure of 105 lbs., and Pintsch's at 90 lbs. The vehicles would have been fully charged at York, and when fully charged the gas should last for 24 hours. Each vehicle is self-contained. We have tried some experiments to see how long it takes for the gas to escape, and I hand in a return showing the result. The filling holes are about ⅜" in diameter. I made an examination of the stock after the accident, and made a report to Mr. Worsdell, which is embodied in Mr. Worsdell's report of November 30th, 1892, now produced. (*See* Appendix.)

19. *John Welburn* states: I am superintendent of the line on the North-Eastern Railway. I hand in the following statement, showing the arrangements which were made at Otterington, Thirsk, and York for the relief of the passengers in the second portion of the Scotch express after the accident. This collision occurred as nearly as can be ascertained at 4.2 a.m., and on signalman Eden, who was on duty at the Otterington station cabin, having been informed of it by telegraph from Manor House, he immediately called up Mr. Kirby, the station-master, and afterwards four platelayers from the cottages near the station. Mr. Kirby arrived at the cabin at about 4.20, accompanied by his son, who was at once sent to the village to call up the porter and some of the Company's workmen. Mr. Kirby sent messages to Thirsk, Northallerton, Darlington, and York, and left the station at 4.30 a.m., accompanied by the men he had got together, on an engine of a goods train which had been stopped at Otterington. On receipt of a telegram at Manor House, from Northallerton, to say that a special with medical men and other assistance had left at 6.10 a.m., Mr. Kirby went back to Otterington to clear the line for this special. On receipt of a telegram at High junction cabin, Northallerton, the night porter was sent by the signalman to call the station-master and the assistant station-master. Mr. Beecroft (the station-master) was at the station at 4.50, and immediately sent for Mr. Baines, the permanent-way superintendent. He also got the postman, who was at the station, to call the doctors, whilst the station staff called the platelayers and others at the Low junction, and at Normandy. An engine was got round from the shed on the Melmerby branch, and with it a coal train standing at Hutton's Wood, was brought back to Northallerton. By this time three medical men had arrived, and the party left Northallerton at 6.7, stopped at Otterington, and arrived at Manor House at about 6.25. Information of the accident was received at Thirsk at 4.10 from the signalman at Avenue junction. The night assistant station-master, Thackray, who was on duty, had the station-master, the assistant station-master, and other servants of the Company, residing in cottages close by, at once called up, and a shunter was sent to Thirsk Town to summon Drs. Hartley and Ferguson, who drove direct to Manor House, reaching there at about 5.45. The permanent-way inspector, who lives at Green Lane, was called up; an engine, van, and carriage got ready, and after a message had been sent to Darlington, Northallerton, and York, it left for Manor House at 5.0, but as the first part of the mail was standing at Avenue junction, they took it forward, leaving at 5.29, and arriving at Manor House at about 5.35. At 6.30 the

first train (the mail taken from Avenue junction to Manor House), left for Thirsk with a few passengers who had not gone to the farm and cottages close by, and four dead and four serious cases of injury, including driver Ewart and Mr. Buchanan. Two of the injured died on the way to Thirsk, and the train was run forward to Thirsk Town station for the purpose of getting Mr. Buchanan and driver Ewart to the cottage hospital at Thirsk as early as possible. The other passengers remained at Thirsk for the second special which left at 8.1 a.m. A train taken from York returned as the second special with passengers leaving the Manor House at 7.23, and on arrival at Thirsk the doctors, who accompanied the train, attended to the passengers, refreshments were provided, and the train left at 8.1, arriving at York at 8.30, and after further attention given by Doctor Gosling to some of the passengers, and refreshments, a train left special for London at 9.14 a.m., reaching King's Cross at 1.30. It was necessary to change the passengers at York into a train made up of carriages fitted with the automatic vacuum-brake used on the Great Northern Railway. Information of the accident was received at York at 4.39, and messages were at once sent to the officials on the list to be called in case of accident, and the locomotive foreman was advised by telephone to get the brake-down gang ready. Mr. Harper and Mr. Steel were called at 4.50, reached the station at 5.12, and left by a special train, which had been got ready by the night station-masters at 5.35, having been delayed a few minutes waiting for Drs. Anderson and Gosling. Twenty-eight men, a number of whom belonged to the ambulance corps, with stretchers, &c., were taken by the train. This train stopped at Thirsk, where arrangements were made to work the traffic over the Melmerby branch. The train reached Thirsk at 6.10 (where more assistance was taken up), was delayed at the North junction waiting for the first train coming from Manor House, and reached the latter place about 6.50. The wrecked train was then on fire. The break-down train left York at 5.52, reaching Thirsk at 6.54, and Manor House at 7.5. The Darlington tool-vans arrived at 7 o'clock. A telegram was received at York from Thirsk at 6.8 a.m. that the train was on fire, and the Company's fire engine and brigade were despatched special, leaving at 7.20 and reaching Manor House at 8.18. Water was obtained from a very small stream about 300 yards away, which was dammed up, and a sufficient supply of water was got to put out the fire. The down line was open at 1.3 p.m. The single line working between Avenue junction and Otterington was commenced at 1.3 p.m., and both lines were open and traffic resumed at 9.3 p.m. The whole of the wreckage was cleared away on Sunday the 6th November. The position of the engine and vehicles of the passenger train are given below :—

North-Eastern engine, No. 178.—The engine and tender lay wheels together, the front end of the engine and the back end of the tender resting on the siding rails.

Great Northern van, No. 1057 - -
East Coast third, No. 60
} These vehicles were broken and burnt.

Pulman car, "India."—The front end completely broken away, and the car, without wheels, was found resting with its front end on the rails of the siding, and the rear on the rails of the up main line.

East Coast composite, No. 26 - -
East Coast van, No. 51
East Coast sleeping, No. 106 - -
East Coast third, No. 163 - -
} These vehicles were burnt.

East Coast composite, No. 129.—Partially burnt.

East Coast third, No. 41 - - -
Great Northern saloon, No. 8 - -
Great North of Scotland horse-box, No. 13 -
Caledonian van, No. 59
East Coast, No. 53 - -
} These vehicles returned to Northallerton.

Ten passengers were killed, the bodies of eight were recovered, and two were burnt, and I have, up to the present, received advice of 36 passengers injured. The passengers who were killed were travelling in the third-class carriage immediately in front of the Pullman car. There is no doubt, I think, that the train was set on fire from the engine and tender, and not from the gas used for lighting the carriages.

Conclusion.

The causes of this terrible collision, which had for its result the death of 10 persons, the injury of 43 other persons, and the complete destruction of seven passenger vehicles and nine goods vehicles, are very clearly indicated by the foregoing evidence.

On the night of the 1st November the up Scotch express, due to leave Edinburgh at 10.30 p.m., was run in two portions, the second portion, on account of the late arrival of one of the north trains, not starting until 11.2 p.m., 32 minutes after the first portion.

Owing to foggy weather both portions of the train lost time on the journey, the second portion rather less than the other, and the first portion, which had left Newcastle at 2.15 a.m. on the 2nd November, and Darlington at 3.14 a.m., passed Northallerton north junction at 3.33 a.m., Hutton Wood at 3.35 a.m., Otterington at 3.37 a.m., Manor House at 3.38 a.m., and Avenue junction at 3.40 a.m., all the block-signals for this train having been given and accepted in accordance with the regulations.

At 3.36 a.m. the signalman at Northallerton north junction, after receiving the "Line clear" signal from Hutton Wood for the first portion of the express, and having been informed by telegraph that there was more than the requisite margin of 20 minutes before the second portion of the express was due, allowed the goods train from Middlesborough to Starbeck, which had been waiting at Northallerton low junction, to come on to the up main line, and to proceed upon its journey; and this train passed Northallerton north junction at 3.38 a.m., Hutton Wood at 3.43 a.m., and Otterington at 3.47 a.m. The signalman at Otterington, who, according to his train record-book, had received from Manor House the "Line clear" for the first

portion of the express at 3.38 a.m., gave the "Be ready" signal to Manor House for the goods train at 3.43 a.m., as soon as he received the "On line" signal for this train from Hutton Wood, and, the signal being accepted, the train was allowed to pass; was given "On line" to Manor House at 3.47 a.m., and, having passed the up distant-signal at danger, came to a stand at Manor House up home-signal, 57 yards north of the signal-cabin, at about 3.55 a.m., according to the driver's estimate, but probably some minutes sooner, judging from the time that the train should have taken to run the distance of 1 mile 30 chains from Otterington.

There is no entry in the Manor House train record-book of any of the block-signals for the goods train, the last entry in the book being the "On line" given to Avenue junction for the first portion of the express at 3.38 a.m., the "Line clear" from Avenue junction for this train, which was sent from Avenue junction at 3.40 a.m. not being entered. The signalman, however, admits that he received, and accepted, the "Be ready" for the goods train, that he did not give any signal forward to Avenue junction for it, and that consequently he did not lower his up-signals, which had been put to danger after the passing of the first portion of the express.

At 3.58 a.m. the signalman at Otterington received from Hutton Wood and accepted at once, the "Be ready" signal for the second portion of the express, which had left Newcastle at 2.38 a.m., and Darlington at 3.39 a.m., and passed Northallerton north junction at 3.58 a.m., and Hutton Wood at 3.59 a.m., at which time it was given "On line" to Otterington.

The Otterington signalman gave the "Be ready" for this train to Manor House at 4 a.m., and immediately got back the "Attention" signal, then the "Line clear" signal for the goods train (as he thought, and was entitled to think), and then the acceptance of the "Be ready" signal for the second portion of the express, whereupon he took off his signals for this train, which passed at 4.1 a.m., running at full speed, probably at nearly 60 miles an hour. Almost immediately after he gave the "On line" signal he was called on the speaking telegraph instrument by the signalman at Manor House, who asked him whether it was the E. P. (express passenger train), which he had given "On line," and he answered "Yes," and then, upon going to the window of his cabin to look out, he heard the crash of the collision.

The signalman at Manor House, James Holmes, states that he remembers getting the "Be ready" signal for the goods train, and accepting it, but he did not record this or any other signal for the train, does not remember receiving the "On line" signal for it, which according to the Otterington signalman was properly acknowledged when sent at 3.47 a.m., and being, as he says, overpowered by sleep, was not aware of the arrival of the train at his up home-signal.

Upon receiving the "Attention" signal and the "Be ready" for the second portion of the express at 4 a.m. he first gave back the "Attention" signal, and then the "Line clear" signal, thinking that he had omitted to give this signal back for the first portion of the express, and he then accepted the "Be ready" signal and lowered his up signals; upon which the goods train started, had run forward for its whole length of 232 yards, less 35 yards, and had attained a speed of about six miles an hour, when the express ran into it at full speed, with steam on and the brakes not applied, and he disastrous consequences recorded at the commencement of this report ensued.

Such being a brief summary of the events leading up to this collision, it is perfectly clear that it was principally due to non-compliance with the block telegraph rules and regulations by signalman James Holmes, who had at the time been on duty for eight hours, and who was manifestly unfit for duty from causes which will be dealt with hereafter.

The actual breaches of the rules by signalman Holmes were as follows, viz.: He omitted to send forward to Avenue junction the "Be ready" signal for the goods train after he had received it "On line" from Otterington; he omitted to book the "Line clear" signal received from Avenue junction for the first portion of the express, and the "On line" signal received from Otterington for the goods train; and he sent the "Line clear" signal to Otterington, and accepted the "Be ready" for the second portion of the express, when the goods train was standing with the head-light of the engine within his view just outside his up home-signal.

The signalman, however, was not the only person who acted in contravention of the rules, for it was, in my opinion, clearly the duty of the driver of the goods train, Joseph Barnes, when brought to a stand at the up home-signal at Manor House, to sound his whistle before remaining there for a length of time, which he estimates at from four to five minutes, but which was probably nearer seven minutes, considering

that a period of 13 minutes from the time that he passed Otterington had elapsed before he started from Manor House up home-signal, and that it is most improbable that he had taken more than six minutes to run the distance of under 1½ miles from Otterington, making every allowance for the fact that after passing the distant-signal, which he did at a speed of between 20 and 30 miles an hour, he was pulling up his train so as to stop at the home-signal. If this driver had obeyed Rule 275A (quoted above), he would certainly have sounded his engine whistle, and thereby probably have roused the signalman, while, considering the state of the weather, it is a question whether the last paragraph of this rule should not have been acted upon, and the fireman sent at once to the signal-cabin, and, therefore, I think that part of the responsibility for this collision must be borne by driver Barnes, who had at the time been upon duty for three hours. He states in excuse, that it is not customary for drivers to whistle, unless they are detained for an unusual time, which he did not think was the case on this occasion, and, if his statement be correct, it is most necessary that drivers should be warned that this rule, which seems to me to be quite clear and explicit, must be more strictly attended to.

The only other servants of the Company on duty at the time, whose conduct could possibly be held to have contributed to the accident, were the driver of the second portion of the express, the signalman at Otterington, and the signalman at Northallerton north junction. If some of the evidence as to the state of the weather be correct, the driver of the express, Roland Ewart, ought certainly to have seen the tail lights of the goods train at a sufficient distance to have enabled him, by the use of his continuous-brake, to reduce very much the speed of his train, or even possibly to stop it short of the point of collision. The evidence, however, as to the distance at which signal-lights were visible at the time is so conflicting, and the fact that the fog, which undoubtedly prevailed to some extent, was very variable is so clearly established, that I hesitate to discredit the driver's statement that he was keeping a good look out, and yet did not see these tail-lights until within 20 or 30 yards of them; although he has evidently somewhat under-estimated the distance at which these lights were visible, for if he could, after the accident, see the signal-cabin when lying 50 yards away from it, as he states he did, he should certainly have seen the tail-lights for at least this distance. Even if he did see them so far off and no farther, he had hardly time to do much to stop his train after realising his danger, for travelling at a speed of nearly 60 miles an hour, he would have had under two seconds in which to take action. Driver Ewart, who, with his fireman, had a most wonderful escape, gave his evidence in a very straightforward manner, and seems by all accounts to have behaved very pluckily after the accident.

The signalman at Otterington, Henry Eden, whose train record book, I may observe, was very badly kept, appears to have carried out quite correctly the duties of signalling the two portions of the express and the goods train, but if he had been quite alive to the importance of his office, and especially if he had kept in mind the condition of signalman Holmes when he went on duty, he ought to have taken steps to ascertain from Manor House why he did not receive "Line clear" for the goods train before 13 minutes had elapsed, seeing that the train had only 1 mile 30 chains to run, and he had every reason to believe that, unless there was some break down, it would have a clear run to Avenue junction, where it would run off the up main line on to the independent or goods line. He is perfectly candid in his statement, and allows that if it had occurred to him he certainly would have inquired, adding that, after sending the "On line" signal for the goods train, he sat down by the fire to read, a perfectly legitimate act, but one which would have been better deferred until the block signalling in connection with the goods train had been completed. This signalman, who had been on duty for 8¾ hours, did not, however, infringe any of the rules of the company, and can hardly be blamed for what occurred.

The action of the signalman at Northallerton north junction in allowing the goods train to come off the branch on to the main line, between the two portions of the Scotch express, has been much criticised, but an examination of the running record of the goods train and the second portion of the express shows that he was quite justified in doing so, as there was more than the regulated margin of 20 minutes between the two trains, the second portion of the express not leaving Darlington until one minute after the goods train had left Northallerton north junction, and, as the distance from this junction to Avenue junction, where there are facing points leading on to a running goods line, is only 6 miles 11 chains, I should consider that the margin allowed is sufficient.

There was ample time for the goods train to have reached Avenue junction, only 1 mile 18 chains south of Manor House, and to have cleared the main line, some minutes before the second portion of the express was due there, and it is difficult to see how traffic could be carried on if through goods trains were not permitted to take advantage of an interval of 20 minutes to run a little over 6 miles.

Moreover, the line being worked on the absolute block system, it matters nothing, so far as risk of collision is concerned, whether a train running in advance of an express train is a goods train or a passenger train, for, if the block regulations are attended to, the worst that can happen is some delay to the express.

As before stated, signalman Holmes was honest enough to admit at once that, after accepting the goods train, he fell asleep, and remembers nothing that happened until he got the attention signal for the express, and, as it seems clear that he was unfit for duty, it is necessary to inquire how it happened that he became so, and why, such being the case, he was allowed to go on duty at all.

As may be gathered from his statement, which is uncontradicted, and from the other evidence, he was not on duty at all on Sunday, October 30th, and employed himself on Monday, October 31st, in working in his garden instead of, as usual, taking some rest before going on night duty. He went on duty at 6 p.m. on Monday, and came off after 12 hours work at 6 a.m. on Tuesday, November 1st, after which he walked to his home, a distance of 2½ miles, arriving at about 7.15 a.m. Here he found that one of his children was ill, and, after getting a certain amount of sleep between 8 a.m. and noon, he was roused by his wife, and told that the child was in a fit, and he then went for a doctor, walking about 1 mile to Otterington station, going on by train to Northallerton, where he was unable to find the doctor, and then walking home, a distance of about 4½ miles, arriving at about 2 p.m. to find that his child was dead. He then walked again to Otterington to telegraph for his mother to come to be with his wife, and on his way went to the station to tell Mr. Kirby, the station-master, what had happened, and to request that a telegram might be sent to York to ask if he might be relieved from duty that night, as he knew that "he was not fit for duty." After this he walked home again, returning to the station at 6 p.m, to find that the answer received from York was that he could not be relieved, whereupon, by permission of Mr. Kirby, he arranged with signalman Creed to remain on duty for two hours longer, while he returned home to get some neighbour to look after his wife, because his mother had not yet arrived, as he had expected she would. He eventually went on duty at 8 p.m., having on his way gone to the signal-cabin at Otterington to ask the signalman there to telegraph to let him know if his mother arrived by a later train, remarking that he would go on duty although he did not feel fit for it, or that he was "about done up," and after getting to his signal-cabin he carried out all his duties quite correctly until after the first portion of the express had passed at 3.38 a.m., when he says that he became quite confused all at once, although he afterwards accepted the goods train at 3.43 a.m., and correctly acknowledged the "On line" signal for this train at 3.47 a.m.

Mr. Kirby confirms Holmes' statement that, at their first interview at about 2 p.m., he said he was "not fit for duty," but he did not mention this to traffic inspector Pick in his telegram to York, sent at about 2.47 p.m., which was in the following words, "Can you send relief to Manor House to-night, Holmes' child dead"; the answer, received at about 4.37 p.m., being, "Cannot relieve Holmes to-night." Mr. Kirby states that Holmes, when told this at about 6 p.m., said it was a bad job as he was in "bad fettle for work," adding, "I do not care so much for myself, but I am more "bothered about my wife as she is not fit to be left all night by herself," and then said that, after going home to make some arrangements for the comfort of his wife, he would come to meet the half-past 7 train to see if his mother had come, and would then go on duty.

Now from these statements it appears that Holmes had only a broken rest of four hours after 12 hours duty, that he was on his legs more or less all day, although the actual distance he walked was not over 15 miles, and that he was suffering considerably from mental distress, which facts, if they cannot be accepted as a sufficient excuse for his subsequent failure to perform his duty after undertaking to do it, go a very long way towards accounting for it.

I have no hesitation in saying that he ought to have been relieved, and I am of opinion that it was a grave error of judgment on the part of the Otterington station-master, Mr. Kirby, not to have stated in his telegram to inspector Pick that signalman Holmes had said that he was "not fit for duty." Probably

he thought that the poor fellow would have been relieved for the reason he did give, viz., the death of his child, as no doubt he would have been if there had been a man available; but when the refusal to relieve him was received, Mr. Kirby might easily have made a fresh appeal on the ground of Holmes being unfit for duty.

It must, however, be remembered that it is comparatively easy to say after an event what should or should not have been done, that when signalman Holmes came to the station at about 6 p.m., he seemed to be more troubled about his wife than about himself, as is stated by signalman Eden as well as by Mr. Kirby, that, although he told Mr. Kirby he was "in bad fettle for work," a somewhat less emphatic expression than saying he was "unfit for work," he voluntarily, and in a very proper spirit, went to make arrangements for going on duty, and made no fresh request to be relieved, and that Mr. Kirby formed the deliberate opinion, wrong though it turned out to be, that signalman Holmes was in a fit state to go on duty, and took care that his anxiety should be lessened by the information that his mother had arrived, and had gone to look after his wife. It is a fact that it was within the discretion of Mr. Kirby to have "switched out" Manor House signal-cabin, that is to have closed it for the night, but it is not advisable to close signal-cabins without notice if it can possibly be avoided, and if he really thought, as he says that he did, that signalman Holmes might safely go on duty, it would not have been right for him to do so.

The refusal to relieve signalman Holmes was sent by a clerk in the absence of inspector Pick, but was practically endorsed by the latter, and under the circumstances I cannot see that he could have done anything else. If it had been reported to him that the signalman had stated that he was unfit for duty, he ought certainly to have taken steps to relieve him, or to switch out the cabin, but as all his relief-men were employed he could only have relieved Holmes by sending a man who had not had his proper allowance of rest after coming off duty, and, however much he may have sympathised with the signalman in his bereavement, as everyone must do, this was not by itself a sufficient reason for incurring the risk of sending on duty a man only half rested, or for switching out the cabin without notice.

Having dealt with the events preceding the collision, it becomes my duty to comment upon the action of the servants of the Company after it occurred, and here it must not be forgotten that in a catastrophe of this magnitude there must inevitably be a great amount of confusion, in which only an exceptional man would act in a perfectly cool and collected manner. Still, when there is a plain rule laid down for the guidance of those concerned it should be obeyed, and therefore I must report that, after finding out what had taken place, it was the duty of driver Barnes (under Rule 281, of which a copy is given above) to detach his engine and to run forward to Avenue junction, instead of sending his fireman or allowing him to go there. Much valuable time would have been gained thereby, and the other servants of the Company who walked to Avenue junction might have been more usefully employed at the scene of the accident.

As it was, with the exception of the Pullman car conductor, Andrew Baillie, who seems to have done everything in his power, there was not one of the men belonging to the train in a position to give assistance to the passengers until nearly an hour had elapsed. There would not have been the slightest necessity for either the conductor or the guard of the train to go to Avenue junction signal-cabin, if the engine of the goods train had run forward, and it is difficult to understand how both of these men, as well as the fireman of the goods engine, could have gone to Avenue junction without meeting. No doubt they acted, on the spur of the moment, in the manner which they thought was best calculated to safeguard the line, and that being their first duty, I do not think that they should be blamed for what was at most a mistake.

There seems also to have been for some length of time an absence of any organisation in the work which was being done at Manor House, for otherwise it is not easy to see why the fire, which did not commence for nearly an hour after the accident, or nearly half an hour after station-master Kirby and four platelayers arrived on the scene, and which driver Ewart describes as being at first a mere flicker which he could have beaten out with a shovel, was not extinguished before it came to a head. It should here be mentioned that the evidence makes it quite clear that the fire was not in any way due to the fact that the train was lighted by compressed gas, that it is nearly certain that it was caused by the wreckage catching light from the engine fire, and that it is hoped and believed that no deaths are to be attributed to the fire, although two bodies were burnt, and one poor little child, who afterwards died, received injuries from burns before she could be extricated from the débris.

It was unfortunate that signalman Holmes did not at once throw his signals to danger when he saw the goods train advancing, instead of losing time by telegraphing to Otterington, for it is just possible that if he had done so the driver of the express might have found the distant-signal at danger when he reached it, which would have enabled him to avert the collision, or at any rate to mitigate its violence. That the signalman is mistaken in saying that he did throw his signals to danger at once is shown by the evidence of driver Ewart, who actually saw the signal-arm of the up home-signal go to danger when he was lying upon the ground after the accident. One feature of this disaster which should be alluded to is in connection with the marshalling of trains, for it brings prominently to notice the safety which is insured to passengers riding in vehicles like the Pullman car, and the danger caused to passengers using smaller and lighter carriages in front of such a vehicle, for the whole of the passengers who were killed on this occasion were in the third-class carriage in front of the Pullman sleeping-car, and from this carriage very few, if any, appear to have escaped without injury. A strong argument is thus furnished for the making up of trains throughout with vehicles of the same pattern and weight, or at any rate for placing such vehicles together in the train.

It now remains to consider what should be done in order to guard against accidents of this class, which is really by far the most important part of the duty of an inspecting officer in these investigations.

It is well known that there are in existence several combinations of electrical and mechanical appliances, the use of one of which, so long as everything was maintained in good order, would make it impossible for such an accident as this to occur, unless a driver were to run deliberately past fixed signals; because, until a train has actually passed over a treadle, or contact-maker, placed in advance of a home-signal, in any position which may be considered suitable, the signalman in the cabin from which this home-signal is worked is prevented from accepting on his block telegraph instrument a following train from the cabin in rear, and is prevented from releasing the starting-signal at the cabin in rear, which signal is electrically controlled by him. It is true that if a train becomes divided between two block-signal cabins, and the driver runs forward without perceiving it, the passing of the engine over the treadle would place the signalman in the position of being able to accept a following train, but there would not be any risk of accident unless the signalman neglected his duty by not looking for the tail-light on the passing train, and unless the guard in charge of the portion of the train left behind in the block section also neglected his duty by omitting to go back to protect his train.

Now, although the mistakes made by signalmen are remarkably few, considering the enormous number of train signalling operations performed daily, it is a fact that these mistakes, when made, frequently lead to very bad accidents, and it is therefore the duty of all railway companies to adopt, upon their important lines at any rate, some safety appliance which will prevent a mistake made by one signalman from causing an accident, if there be such a machine which has been proved to be reliable, and, as some of the inventions which I have mentioned have been in general use for some years upon three lines of railway, and in partial use upon others, both in the United Kingdom and abroad, and have been found satisfactory, I would strongly urge, not only the North-Eastern Railway Company, but other railway companies also, to give this question their immediate consideration.

The fitting up of railways in this manner must, however, be an operation of time, and there is one simple alteration in the block-telegraph regulations of the North-Eastern Railway Company, which would, I am convinced, conduce greatly to the safety of passengers travelling on this line, and which ought to be adopted at once.

Upon some railways, although by no means upon all, unfortunately, a signalman is not allowed even to offer the "Be ready" for a second train until he has received from the cabin in advance the "Out of section," or "Line clear" signal for the preceding train, but this is not the case on the North-Eastern Railway; whereas it is manifest that in this particular case, if such a regulation had been in force, the signalman at Otterington would not, or should not, have offered the "Be ready" for the second portion of the express, but would first have inquired from the signalman at Manor House what had become of the goods train, and the accident would probably not have happened.

Another point to which the attention of the company should be directed is the question of relief signalmen. It was stated, and I have no reason to doubt it, that the proportion of relief signalmen now employed in the York district of the North-Eastern Railway, viz., 17 out of a total number of 300, or just under

6 per cent. has hitherto been found to be quite sufficient, but a case has now arisen in which it was found to be impossible to relieve a man, who, admittedly, ought to have been relieved, and, although the circumstances may have been exceptional, it is clearly the duty of the Company, who alone have the information to enable a judgment to be formed of what is required, to take such steps as may be necessary to prevent such an occurrence in future.

In conclusion, although the length of the hours of work had nothing whatever to do with this accident, and although the causes of signalman Holmes being unfit for duty were matters entirely outside the control of the railway company, I think it right to record my opinion that a tour of duty of ten hours is the outside which ought to be allowed in main line signal-cabins, and that the employment of signalmen for a greater number of hours, consecutively, especially at night, upon lines where they have to deal with considerable traffic of all kinds, including fast express traffic, is an element of danger, even in a signal-cabin as small as that at Manor House, where the working is as simple as it can possibly be in any main line cabin, which is passed by between 80 and 90 trains each way during the 24 hours. It is true that, so far as I can ascertain, there have only been two accidents or collisions in the last 15 years which have been attributed to the action of a signalman waking out of a state of sleep, and none to the fact of a signalman having fallen asleep and remained so; but there is, no doubt, considerable danger when a signalman who has fallen asleep, or who has been stupefied by fatigue or mental distress, as signalman Holmes seems to have been, is suddenly roused, and takes up his work before he is himself again, and therefore every possible precaution should be taken to prevent such a state of things arising.

In connection with the work of signalmen, the distance at which they are obliged to live from their signal-cabin must always be considered, for, although, no doubt, a brisk walk of a couple of miles when going to and from work, on a fine day, would rather benefit than otherwise a man who is employed for hours at a sedentary occupation, yet it must be remembered that this walk has to be performed in all weathers dry or wet, and often in snow, and signalmen should therefore, for this and other reasons, be housed wherever it is possible, within easy reach of their work.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

F. A. Marindin,
Major, R.E.

APPENDIX.

List of persons killed (10).

Mr. R. M. Boyle, Augener and Company, 86 Newgate Street, E.C.

H. P. Brodie, Plym Villa, Wallwood Road, Leytonstone.

Mr. John Lea, 111, Commercial Street, Spitalfields Market, E.

Mr. James Anderson, 8, Panmure Street, Dundee.

Mr. J. Boswell Hill, 119, George Street, Edinburgh.

Captain Duncan McLeod, the "Black Watch."

Lottie Hamilton (child), 2, Gilmore Street, Alexandria, Dumbarton.

Goods guard Petch, Middlesbro'.

Mrs. McKenzie (wife of Alex. McKenzie, injured), Edinburgh.

Miss McCulloch (aunt to L. Hamilton and sister to David McCulloch), Alexandria, Dumbarton.

List of persons who have complained of injury up to the 20th December.

Lady Stewart.
Mr. Geo. Rhodes.
Mr. David J. Reid.
Mr. David W. McCulloch.
Miss S. Robinson.
Rose White.
E. Burdsall.
W. Sands.
Mr. Alex. McKenzie.
Provost Sutherland.
Mrs. Dadd.
Mr. Jas. Buchanan.
Driver Roland Ewart.
Fireman Edward Head.
Mr. B. A. Hodgson.
Mr. J. L. Stewart.
Mr. A. W. Taylor.
John Rennels.
H. Wm. McNamara.
Sarah Ann Owens.
Margaret McNamara.
Annie Dilton.
Sarah Attfield.
Mrs. Milne and two children.
Miss Edith Pritchard.
Rev. J. S. Forsyth.
Miss Cheesman.
Mrs. Davis.
Miss Probert.
Anna Fennell.
Sarah Jordan.
Lily Hayler.
Amelia Higgleton.
Gertrude Waymark.
Mr. John Cook.
Mr. John Kemp.
Miss Jane Robertson.
Major-Gen. F. W. Lambton.
Mr. W. J. Harvey.
Guard Bean.
Conductor Wimpress.

Damages to Rolling Stock.

Damage to Engine No. 178.

The following parts were bent:—All frames, leading and trailing-axles, smoke-box, door, and dome-cover. The following parts were broken:—All wheels, both buffer-beams and buffers, leading and driving-tyres, left side-rod, leading axle-boxes, reversing-gear, all springs, all foot-steps, cab-splashers, sand-boxes, chimney, boiler-mountings, and Westinghouse brake-gear.

Damage to Tender.

The following parts were bent:—All axles, end and right side bent and broken in, frames bent and broken. The following parts were broken:—All axle boxes, Westinghouse brake-gear, all springs, and all foot-steps.

DAMAGE TO WAGGONS.

Numbers.	Class.	Year when Built.	Remarks.
	LONDON AND NORTH-WESTERN RAILWAY STOCK.		
23,218	Merchandise waggon	1870	Destroyed by fire.
40,787	" "	1876	" "
855	" "	1875	" "
10,097	" "	1881	" "
	NORTH-EASTERN RAILWAY STOCK.		
3,610	Merchandise-waggon	1892	Destroyed by fire.
61,645	" "	1884	" "
22,594	" "	1885	" "
73,783	" "	1890	" "
42,237	Goods-van	1876	" "

The above will require to be reconstructed.
In addition to these the following vehicle was slightly damaged :—

London and North-Western Railway Company's merchandise waggon No. 30,865.

DAMAGE TO CARRIAGES.

Numbers.	Class	Year when Built.	Remarks.
	EAST COAST JOINT STOCK.		
26	Composite-carriage	1879	Destroyed by fire.
51	Luggage brake-van	1883	" "
60	Third-class carriage	1879	" "
106	Sleeping-car	1890	" "
129	Composite-carriage	1888	Partly destroyed.
163	Third-class carriage	1890	Destroyed by fire.
	PULLMAN CAR.		
"India"	Sleeping-car	1876	Heavily damaged, and afterwards dismantled.
	GREAT NORTHERN STOCK.		
1,037	Luggage brake-van	1879	Destroyed by fire.

The above will require to be re-constructed.
In addition to these the following vehicles were slightly damaged :—

No. 41.—East Coast third-class.
No. 8.—Great Northern saloon.

DETAIL of EMPLOYMENT of RELIEF SIGNALMEN in the YORK DISTRICT on November 1st.

Name.	Where Stationed.	Where Engaged.	Day or Night.	Why sent.
T. Williamson	York	Weeland Bridge	Day	Bridge washed away.
J. Allen	"	"	Night	"
A. Needham	"	"	"	"
J. Richardson	"	"	Day	"
J. Cass	"	Heck	Night	"
C. Pearson	"	Seamer	Day	Signalman removing.
G. Collyer	"	Pilmoor	Night	Relief Night.
G. Musgrave	Northallerton	Otterington	Day	Signalman on leave.
W. Snowdon	"	Northallerton (High C)	2 p.m. to 10 p.m.	"
D. Malpas	Thirsk	Naburn Road	Night	Signalman removing.
W. Horsley	Shipton	Alne	Day	Relief day.
G. Tomlinson	Ch. Fenton	Sherburn	"	"
W. Dawkins	Ulleskeley	Bottonpercy	"	"
T. Best	Selby	Naburn	"	"
W. Simons	Burton Salmon	Moor Carr Lane	Night	Signalman ill.
W. Johnson	Castleford	Sherburn C.	"	Relief Night.
T. Mothersdale	Moss	Joan Croft	"	"

DEAR SIR, Gateshead, Nov. 30, 1892.

REFERRING to your letter of the 21st instant, Mr. Head arrived with me at the scene of the accident at 2 p.m. on the 2nd instant, and examined the parts of gas apparatus of what appeared to us to be four vehicles, and found amongst other fittings eight reservoirs; four of these were Pintsch's welded reservoirs, and except that one had a bulge, all were apparently in good condition, but had been entirely torn away and separated from the underframes of the carriages, the fittings being broken off close to the ends of the reservoirs.

These four reservoirs belonged to East Coast third-class 163, and East Coast sleeper 106, each vehicle having two; we arrive at this conclusion from the fact that these were the only two vehicles in the train fitted with Pintsch's apparatus according to the records taken at Newcastle. Of the other four reservoirs, one was entirely torn away from a vehicle which had another one left on the underframe; both these reservoirs had the fittings torn away from the ends; these we appropriate to East Coast van 51, as there was a hand-brake attached to the vehicle, and the axle-box was marked "E.C.J.S., No. 12;" this vehicle would also have two reservoirs according to our records. The remaining two reservoirs were attached to an underframe of a carriage with all the fittings attached and apparently intact, with the exception that every joint was loose, which would allow the gas to escape. We are unable to appropriate this vehicle.

In construction, Pope's reservoirs are riveted, and then tinned and sweated along the joints; we examined these four, and found the solder had all been melted away so far as we could see; this would consequently render them useless for containing pressure.

We found that drawn back to Northallerton were East Coast composite 129, East Coast third 41, Great Northern saloon (or sleeper) 8, and Great North of Scotland horse-box 13; the three passenger vehicles when examined at Northallerton had no gas in the reservoirs, and East Coast composite 129 had one end compartment burnt away. Caledonian van 59 and East Coast van 53, after being drawn back to Northallerton, were sent forward to their respective destinations.

The train consisted of 13 vehicles, of which 11 are mentioned above, leaving two to be accounted for; although we made careful search at the scene of the accident, we could not find any gas fittings for these two vehicles, but I will send Mr. Head to Doncaster to try and trace out the reservoirs, and see what their condition is like.

I think, with regard to the gas lighting of this train, and the question of the gas having anything to do with the conflagration, that the following four points have been established, showing that the compressed oil gas had nothing to do with the burning of the coaches:—

1st. That immediately on the collision the whole of the gas lights in the train were extinguished.

2nd. That a few moments after the collision the whole of the gas had escaped from the reservoirs, either by the brass fittings being torn off or the joints broken.

3rd. That from three-quarters of an hour to an hour after the collision took place there was no sign of the gas having produced any fire whatever.

4th. The fire originated about an hour after the collision happened, and was caused by the live coals which had been shot out of the fire-box of the locomotive on to the coaches nearest to it, and caused them to catch fire, the locomotive was turned on to its back and the ashpan carried away, hence the whole of the fire from the fire-box would be strewn over the wrecked vehicles.

This, I think, is all the information you require.

Yours truly,

(Signed) W. WORSDELL,

G. S. Gibb, Esq., York.

(1.35 a.m. Express from Newcastle to York.—Engine No. 178.—Driver R. Ewart.—2nd November 1892.)

Owner and Class of Vehicle.	No.	How Fitted with Gas Apparatus.		Cubical Contents of Reservoirs with and without Pressure.		Number of Lamps.		Number of Lights.	Hours of Burning when Charged to a Pressure of 6 atmos. or 90 lbs. (Pintsch), and 7 atmos. or 105 lbs. (Pope).	Pressures in the Reservoirs when Leaving Newcastle.	Probable Pressures at the Time of the Accident.	Remarks.
		Class of Fittings.	No. and Size of Reservoirs.	Two Reservoirs without Pressure.	Two Reservoirs at a Pressure of 6 atmos. (Pintsch), and 7 atmos. (Pope).	Single Flame.	Double Flame.					
				Cubic Feet.	Cubic Feet.				Hours.	Lbs.	Lbs.	
Great Northern van (leading vehicle from Newcastle).	1,057	Pope's	Not known	—	—	—	—	—	—	55	—	Could not find any fittings for this vehicle.
East Coast Joint Stock third	60	„	2 6′ 6″ × 18″	22·96	160·72	—	6	12	13·4	40	29	Could not find any fittings for this vehicle.
Pullman car	"India"	—	—	—	—	—	—	—	—	—	—	Fitted with oil-lamps.
East Coast Joint Stock composite.	26	Pope's	2 5′ 3″ × 18″	18·54	129·78	—	4	8	16·22	50	40	Reservoirs attached to underframe, supposed to belong to this carriage.
East Coast Joint Stock van	51	„	2 4′ 0″ × 18″	14·12	98·84	3	—	3	32·94	50	45	One reservoir torn away and the other left on.
East Coast Joint Stock third	163	Pintsch's	2 7′ 4″ × 19″	28·90	173·40	7	—	7	24·77	15	10	Reservoirs entirely torn away and separated from the fittings.
East Coast Joint Stock sleeping carriage.	106	„	2 7′ 4″ × 19″	28·90	173·40	10	—	10	17·34	30	22½	
East Coast Joint Stock composite.	129	Pope's	2 6′ 6″ × 18″	22·96	160·72	1	4	9	17·85	75	66	End compartment burnt away.
East Coast Joint Stock third	41	„	2 6′ 6″ × 18″	22·96	160·72	—	6	12	13·4	75	64	These three vehicles were drawn back to Northallerton and had no gas in when examined.
Great Northern saloon (or sleeping carriage).	8	„	Not known	—	—	—	—	—	—	40	—	
Great North of Scotland horse-box.	13	—	—	—	—	—	—	—	—	—	—	——
Caledonian van	59	—	—	—	—	—	—	—	—	—	—	——
East Coast Joint Stock van (rear vehicle from Newcastle).	53	Pope's	2 4′ 0″ × 18″	14·12	98·84	3	—	3	32·94	75	70	This vehicle was also drawn back to Northallerton.

Note.—With regard to the Great Northern van No. 1,057 and Great Northern saloon (or sleeper) No. 8, we have no record of the size of reservoirs on these vehicles as they have not been sent us by the Great Northern Company.

We have, however, an official return from that company of all the East Coast Joint Stock, which agrees with the records taken at Newcastle on the night of the accident.

It will be noticed that double lights are, in some cases, used in thirds. It is the practice now to fit double-flame lamps in all classes of East Coast Stock.

For particulars of the state of the gas fittings, *see* Mr. Worsdell's report to Mr. Gibb.

With regard to the probable pressures at the time of the accident—East Coast third, No. 60, with 29 lbs. of gas in the reservoirs, would be equal to 45·92 cubic feet; East Coast composite, No. 26, with 40 lbs. = 49·31 cubic feet; East Coast van 51, with 45 lbs. = 42·36 cubic feet; East Coast third, No. 163, with 10 lbs. = 19·87 cubic feet; East Coast sleeper 106, with 22½ lbs. = 43·35 cubic feet; East Coast composite, No. 129, with 66 lbs. = 101·02 cubic feet; East Coast third, No. 141, with 64 lbs. = 97·80 cubic feet; and East Coast van, No. 53, with 70 lbs. = 65·79 cubic feet.

PARTICULARS of the TIME occupied in DISCHARGING GAS from the RESERVOIRS on two COMPOSITES, two BRAKE-THIRDS, and two VANS, under four separate TESTS.

Test No.	Particulars of the test made.	Three North-Eastern vehicles fitted with Pintsch's Apparatus, each charged to 6 atmospheres (or 90 lbs. per square inch) = 24 hours burning.				Three vehicles fitted with Pope's Apparatus, each charged to 7 atmospheres (or 105 lbs. per square inch) = 24 hours burning.				Remarks
		Particulars as to the Sizes of the Passages through which the Gas passed out of the Reservoirs.	7-light composite. 1 single and 3 double flame Lamps. 1 6′ 5″ × 19″ and 1 8′ 0″ × 19″ Reservoir representing a cubical capacity of 169·8 feet at a pressure of 90 lbs.	4-light brake, third. 4 single flame Lamps. 1 8′ 0″ × 19″ Reservoir representing a cubical capacity of 94·2 feet at a pressure of 90 lbs.	3-light van. 3 single flame Lamps. 1 5′ 0″ × 21″ Reservoir representing a cubical capacity of 72·12 feet at a pressure of 90 lbs.	Particulars as to the Sizes of the Passages through which the Gas passed out of the Reservoirs.	7-light composite. 1 single and 3 double flame Lamps. 2 7′ 3″ × 17½″ Reservoirs representing a cubical capacity of 169·40 cubic feet at a pressure of 105 lbs.	4-light brake, third. 4 single flame Lamps. 1 5′ 9″ × 21″ Reservoir representing a cubical capacity of 96·81 feet at a pressure of 105 lbs.	3-light van. 3 single flame Lamps. 1 4′ 7″ × 20½″ Reservoir representing a cubical capacity of 73 50 feet at a pressure of 105 lbs.	
			Time occupied in emptying the Reservoirs.				Time occupied in emptying the Reservoirs.			
1	Made by opening one filling valve.	Passage from reservoir to filling valve = ¼″ diameter, and opening from filling valve to atmosphere = 5/16″ diameter.	Mins. Secs. 11 0	Mins. Secs. 12 45	Mins. Secs. —	Opening from filling valve to atmosphere, ½″ diameter, with ¼″ lead throughout all pipes and connections.	Mins Secs. 10 45	Mins. Secs. 5 22	Mins. Secs. —	I consider No. 2 test with Pope's apparatus represents the conditions under which the gas would escape from East Coast composite No. 26, as every joint on this vehicle was broken and the leakage arising therefrom would I think be fairly equal to the opening of both filling valves.
2	Made by opening both filling valves.	Two outlets; the passages and openings being of the same diameters as above.	5 52	8 0	—	Two outlets, the passages and openings being of the same diameters as above.	5 0	2 30	—	Test No. 3 would represent van No. 51, which had one reservoir torn away and fitting broken close off, the other reservoir was left on and would have a short piece of pipe attached to an elbow, consequently the passage would not be direct to atmosphere.
3	Made by breaking the connection between the reservoirs.	From one reservoir the gas had a direct passage to the atmosphere, size of orifice, 5/16″ diameter. From the other the gas had to pass through a piece of ¼″ iron pipe.	4 7½	3 24 (This was a direct passage to atmosphere— orifice, 5/16″.)	—	—	—	—	—	Test No. 4 would represent East Coast third 163 and sleeper 106, both of which had the reservoirs torn away.
4	Made by breaking the connection close to the reservoirs.	Size of orifice 5/16″ diameter; this was a direct passage to the atmosphere.	—		1 41	Size of orifice = 5/8″ diameter. This was a direct passage to the atmosphere	—	—	1 58	

Printed copies of the above Report were sent to the Company on the 10th January.

NORTH STAFFORDSHIRE RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
13th August 1892.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 6th instant, the result of my enquiry into the circumstances attending a collision, which occurred on the 27th July at Uttoxeter station, on the North Staffordshire Railway.

In this case, an engine and tender (No. 13), which had brought the 6.10 p.m. up passenger train from Macclesfield to Uttoxeter, and had placed this train, when emptied, upon a siding on the down side of the main line, was, by a misunderstanding, crossed, tender in front, from the down main line on to the down branch line, instead of on to the up main line, and came into collision at 7.50 p.m. with a loaded third-class passenger carriage, which had formed part of the train from Macclesfield, and had been placed upon the down branch line in readiness to be pushed into an up siding, there to wait for the up train to Derby to which it was to be attached.

The force of the collision drove this carriage forward for about 29 yards on to the tail of a train, which was standing at the down branch platform, waiting to start to Ashbourne at 8 p.m.

Seven passengers were injured, the arm of one being broken.

The damages to the rolling stock were as follows:—

Tender-buffer casting cracked; six side-lights and one buffer casting on No. 162 third-class carriage broken, and one buffer-rod bent.

There was no damage to the Ashbourne train, or to the permanent-way.

Description.

At Uttoxeter station the double line from Derby and Burton to Stoke, here running from east to west, and upon a curve to the left, is joined by the Churnet branch, a double line running from the north from Macclesfield, Ashbourne, &c., and upon a sharp curve to the right, the trailing-points of the junction being upon the down main line from Derby. There is a platform in the angle between the two lines, for the up main line and the up Churnet line, one outside the down main line, and one outside the down Churnet line, the line from Macclesfield and Ashbourne being termed the up line as far as Uttoxeter, although it becomes the down line to Stoke after joining the main line.

Close to the junction, on the Stoke side of the points, there is a through road leading from the down main line to the down Churnet line, with slips forming an ordinary main line cross-over road. The points for the cross-over road are worked by No. 20 lever, and those for the through road on to the down Churnet line by No. 19 and No. 20 levers, the disc-signal, near the trailing-points on the down main line, and worked by No. 18 lever, being capable of being pulled off for either the through road, or for the main line cross-over road.

The only other main line connections to which it is necessary to refer are the trailing-points of the Brewery siding, which are on the down main line a few yards west of the cross-over road, and the trailing-points of what is called the new siding, which are on the up main line over 100 yards west of the junction.

The signal-cabin is on the north side of the line between the junction and the new siding.

Between the signal cabin and the junction the line falls towards the east upon a gradient of 1 in 264.

The following distances from the signal-cabin should be noted, viz.:—

To trailing-points (No. 29) of new siding on up main line -	16 yards	westward.
„ „ „ (No. 13) of Brewery siding on down main line	56 „	eastward.
„ „ „ (No. 20) of cross-over road „ „ „	63 „	
„ facing-points (No. 22) of junction on up main line -	92 „	
„ trailing-points (No. 20) of cross-over road on up main line	109 „	
„ „ „ (No. 19) of through road on down Churnet line	110 „	
„ point of collision, the west end of carriage on down Churnet line - - - - - - -	145 „	
„ tail of the Ashbourne train on down Churnet line - -	174 „	

The carriage standing at the point of collision was visible from the signal-cabin, but the tail of the Ashbourne train was not visible.

Evidence.

George Gregory states: I have been 20 years in the service as porter and shunter, all the time at Uttoxeter. On the 27th July I came on duty at 7 a.m. to work till 8 p.m., with two hours off for meals. These were my regular hours, and I was on for the same time on the previous day. The 6.10 p.m. train from Macclesfield to Uttoxeter arrived at 7.37 p.m., and stopped at the up Churnet platform. It was made up as follows:—Engine and tender, saloon for Stoke, carriage for Derby, and the ordinary train consisting of five vehicles. I unhooked the engine and told the driver to fetch the milk-van for Liverpool, which was standing on the down Churnet line. This van had arrived at the rear of the loop-line train from Stoke at about 7.15 p.m. The engine then came back to the train with the milk-van. I told the driver to draw up all together, and go into the Brewery siding. When the train stood on the down main line opposite to the signal-cabin I shouted to the signalman, "Brewery, then down Churnet; Brewery "again, then down Churnet new siding," *i.e.*, 1, Brewery siding to put the train in; 2, down Churnet to leave the third-class carriage for Derby; 3, Brewery again to leave saloon and milk-van to be picked up by the 7 p.m. train from Derby. He replied, "All right." I performed the shunting myself, except the hooking off of the engine from the train when on Brewery siding. I left this for the fireman to do, and ran down the line, and on to the Churnet down platform, to tell the driver of the train for Ashbourne which was standing there that I should require him to knock the third-class carriage back into the new siding. I had only just spoken to the driver, Lightfoot, when I turned round and saw with surprise the light engine dash into the carriage. I cannot say at what speed the engine was running. I always tell the signalman the shunts to be made before commencing operations, otherwise it would mean a lot of running about and delay. I steadied the Derby carriage down myself to the crossing on the down Churnet line where it was run into. When I was speaking to the signalman I was standing by the Brewery siding points. When the engine came out of the Brewery siding the second time with the milk-van, saloon, and carriage for Derby attached, I hooked off the Derby carriage as soon as the engine and three vehicles were on the down main line clear of the Brewery siding points. The engine then gave it a start back, and it ran back on to the down Churnet line, which is on a slightly falling gradient, and I steadied it down. The engine then went back into the Brewery siding and left the milk-van and saloon. I came back to put them in, and then left to go to the Ashbourne train. I did not tell the signalman how I intended the Derby carriage to be placed in the siding, where it had to wait for the train for Derby. It is the usual practice for the Ashbourne train to knock back such carriages into the new siding. When there are several carriages to be dealt with in this manner they are coupled on to the Ashbourne train, but when there is only one it is usual to knock it back, and for me to steady it down. Owing to the curve and the gradient the carriage does not run back far, and the train sticks to it, and pushes it back all the way. I did not tell either the driver or signalman what I was going to do. It is never the practice for the engine to cross over to pull the carriage on to the siding The carriage was standing on the crossing, and the tail of the Ashbourne train was not above two yards from it. When I said to the signalman "Down Churnet new siding." I did not mean that the engine was to take the carriage there. If I had meant this I would have said "Across the road, "down Churnet new siding."

William Beaman states: I have been 22 years in the service and a signalman for 11 years, at Uttoxeter junction for 10 years. On the 27th July I came on duty at 6 p.m. for 12 hours in the west cabin, Uttoxeter. I worked in the 6.10 p.m. train from Macclesfield to Uttoxeter at 7.37 p.m. After the train arrived the driver whistled to go outside to pick up a milk-van which was standing on the down Churnet line. I turned the engine across to pick this up. Afterwards the engine went back to the train standing on the up Churnet line. It stood there for a few minutes, and then the driver whistled out again and came up to the cabin with the train. Shunter Gregory came with the train. He called out, "Brewery, down Churnet; then Brewery, down Churnet new siding." The driver put the train into the Brewery siding, shunted the Derby carriage across on to the down Churnet line, and then came back into the Brewery siding with a milk-van and a carriage for Stoke. The engine then came out light from the Brewery siding, and I turned it across on to the Churnet line, thinking that it was going to pick up the Derby carriage to put it into the new siding, which is west of my cabin, to be attached to the 6.10 p.m. train from Crewe when it arrived. It is usual for Shunter Gregory to give me orders in the way he did, and not to call out for every single shunt made. The driver did not whistle except for the signal to come off the up Churnet line. It is not usual for drivers to whistle when shunting is being done, as I work to the orders of the shunter. My disc-signal was off for the driver to cross. This disc comes with the cross-over road when set for either the up main or the down Churnet lines. I thought Gregory meant the engine to come across to pull the Derby carriage into the new siding, and therefore I set the crossing for the Churnet line. His saying, "Down Churnet new siding" made me think this. If he had said, "Across the road" before saying "Down Churnet new siding," I would have thought he meant that the engine was to cross on to the up main line. It is a frequent occurrence for a through carriage for Derby to be shunted into the new siding. At times I have seen that done by this very engine. The most common way, in the daytime, is to horse it back, but sometimes it is pushed back by the Ashbourne train. I should say that, if anything, it was more often put on by the engine than by the Ashbourne train—about equal perhaps. The Ashbourne train pushes it right back on to the siding.

Joseph Hughes states: I have been in the service since June 1880, and a passed driver for about three months. On July 27th I came on duty at Uttoxeter at 6.30 a.m. My engine, No. 13, is a six-wheeled engine with driving and trailing wheels coupled, and with a six-wheeled tender. It is fitted with a steam brake working blocks on the coupled engine wheels, and on the tender wheels, and with the automatic brake apparatus for use in the train. It has a brake-pipe at the leading end. My hours of work that day were till 8 p.m., working all through the day with short intervals off. I would be off at Stockport for one hour and at Macclesfield for about two hours, if running to time. I acted as fireman with the train from Macclesfield, but took charge of the engine when my driver, Needham, left, after arriving at Uttoxeter at 7.35 p.m. I went out on the down Churnet line, picked the milk-van up, crossed the line, and backed on to my train again on the up Churnet line, and then took the train on to the down main line and backed it into the Brewery siding. I then pulled out the three front vehicles and knocked one carriage back on to the down Churnet line, put the other two vehicles into

the Brewery siding, and came out with the engine and tender, and went over the points. I shouted to the pointsman, "Round the curve, Will!" and motioned with my hand to that effect also. He pulled over the points, and pulled off the disc, and I proceeded. I had my eyes on the crossing as there were a good many passengers about at the time. Just as I was about to whistle for the crossing I found that the tender was going the wrong way, so I put the steam-brake on, and my mate applied the hand-brake. I think I was about a dozen yards or so from the carriage on the down Churnet line when I applied my brake, and I was running at about three miles an hour when I struck the carriage. When the shunting was being done on the Brewery siding, Gregory said, "Churnet and the other two back on the Brewery "siding." Gregory left us on the Brewery siding, and porter Harper hooked off the engine. I saw nothing of him after this. It is usual for this engine to turn over-night by running round the triangle, so as to be ready for the next morning. I thought the Ashbourne train was going to push the carriage on to the new siding, as that is the usual way of doing it, and that I was to run round the triangle. Sometimes I have put a through carriage into the siding, and have waited to put it on the main line train, but that is when it has been next to the tender. It was daylight at the time, but rather dull and getting dusk. The accident happened at about five minutes to eight. I did not hear Gregory shouting to the signalman. When my tender struck the Derby carriage it knocked it into the tail of the Ashbourne train, about 25 yards off. It did not rebound on to us again.

Edward Bland states: I am employed as a cleaner at Uttoxeter, and came on duty on the 27th July at 7.30 p.m. to meet my engine at the station, and to relieve Hughes as fireman. We worked off the train and performed some shunting off the Brewery siding. When we had completed the shunting Hughes called to the signalman to turn him round the curve, and the signalman pulled the ground disc off. I was looking out for passengers on the level crossing, and then noticed that we were going on the wrong road, and into the Derby coach. I shouted to Hughes, "Stop! He has turned us into the coach." I put my hand-brake on, and he applied the steam-brake. He picked the wheels up and we slid into the coach. We collided with the coach when running at about two miles an hour. I relieve the fireman three nights a week. I have been in the service two years and two months.

William Beaman (re-called): I did not hear the driver, Hughes, shout out, "Round the curve, Will!" nor did I see him motion to that effect.

Thomas Miller states: I have been 40 years in the service, and station-master at Uttoxeter for 15 years. On the 27th July I was on the line, between the station and the west cabin, when shunting operations were being performed. I did not hear what passed between the shunter and the signalman, nor did I hear any instructions given by the shunter to the driver. The first thing which attracted my attention was signalman Beaman, when the engine was passing through the cross-over road, calling out, "I have turned him on to the down Churnet." I immediately turned round, and saw the engine run into the standing coach. It was running slowly at the time. I turned again to the signalman and said, "Why did you do that?" and he replied, "Gregory told me down Churnet." I at once went to the assistance of the injured passengers, and sent for Dr. Fletcher. I found seven passengers injured in different ways. There were about 45 passengers in the carriage. The injured and the others were sent by the 8.45 p.m. train, and the 9.30 p.m. train from Ashbourne to Derby. The accident happened at 7.50 p.m. It was daylight at the time. Shunter Gregory is a good man, and I have never known him to make a mistake of the kind before. In summer time there are often through carriages for Derby, sometimes as often as nine or 10 a week. Before the shunting horses go away at 5.30 p.m., it is usual to move these carriages by horses. It is much more common for the Ashbourne train to push them back than for the engine to do the work, although the engine sometimes does it. I think that if I had been the signalman I would have understood Gregory as Beaman did; nine out of 10 signalmen would have done so. I think, however, that I would have told the driver what I was going to do before turning him back on to a coach. The carriage was on the boarded crossing, and the tail of the Ashbourne train was opposite to the parcels-office door.

Conclusion.

From the foregoing evidence it appears that, after the arrival at Uttoxeter of the 6.10 p.m. up passenger train from Macclesfield, the engine performed some shunting operations, first bringing a milk-van off the down Churnet line to the front of the train, then drawing the whole train ahead on to the down main line and backing it into the Brewery siding, then pulling out the three front vehicles and backing a loaded third-class carriage for Derby across on to the down Churnet line, and then placing the two front vehicles again upon the Brewery siding. All these operations were done under the orders of shunter Gregory, who had instructed the signalman what was to be done, using the words "Brewery, then down Churnet; Brewery again, then down Churnet new siding," but, after the last shunt, Gregory went away to tell the driver of a train for Ashbourne, which was standing at the down Churnet platform ahead of the loaded through carriage for Derby, to push this carriage back into the new siding, a distance of about 160 yards. In the meantime the engine and tender had gone out from the Brewery siding on to the down main line, the driver intending to cross on to the up main line, so as to run forward to the east junction and round the triangle in order to turn his engine, and the signalman being under the impression that the engine was to cross on to the down Churnet line to pull the loaded carriage into the new siding. Acting under this impression the signalman set the road for the crossing on to the Churnet line, and the driver, starting back as soon as the disc-signal was pulled off, did not perceive that he was not going the way he intended until he was too close upon the loaded carriage to stop before striking it, which his tender did when still running at about three miles an hour, the carriage being driven

back with considerable force on to the tail of the Ashbourne train, which fortunately had not commenced to set back.

The collision was clearly due to a misunderstanding between the signalman and shunter Gregory, and I consider that the latter, who had at the time been on duty for 12 hours 50 minutes, less two hours off for meals, is responsible, for, as the station-master says, nine out of ten signalmen would have interpreted the words used by the shunter exactly as this signalman did. At the same time I think that the whole proceeding shows that there is a want of care and method in carrying out the shunting operations at this station, and I trust that in future the shunter will give his instructions in a clearer manner, and that the signalman will not put an engine across on to a line occupied by a passenger train or vehicle without telling the driver what he is about to do. In this case, considering that the engine was running tender first, that the driver got a proper disc-signal to cross, and that the distance between the slip-points and the tail of the loaded carriage was very short, I do not think that any blame can be attached to the driver of the engine, who did his best to stop as soon as he found out where he was going.

It is better always to couple on carriages which have to be backed on to a siding, and, although it was stated that such carriages are carefully pushed back, I cannot help thinking, from the manner in which more than one of the witnesses spoke of them being "knocked back," that a certain amount of fly-shunting of loaded passenger vehicles, which is a dangerous and objectionable practice, does obtain at this station.

The interlocking of the disc-lever and the point-levers at the cross-over road is in accordance with the usual practice at ordinary cross-over roads with slips, but if there is much shunting of loaded passenger carriages through this crossing, it would be better so to interlock the levers that the disc signal can be pulled off for one way only, as is sometimes done, or to provide a second disc so as to have one for each way.

It must be noted that the hours of duty for the day of acting-driver Hughes are 13½ hours, which, in spite of his being off for intervals of one hour and two hours, are too long.

I have, &c.,

F. A. Marindin,

Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

Printed copies of the above Report were sent to the Company on the 26th August.

SOUTH-EASTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
24th December 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 24th ultimo, the result of my enquiry into the causes of the collision which occurred on the 19th ultimo near London Bridge station, on the South-Eastern Railway.

In this case the 6.21 a.m. London, Brighton, and South Coast Company's empty train from New Cross station for London Bridge, where it was due about 6.31 a.m. while crossing from the up main line to the up Croydon line at No. 4 cabin, London Bridge, (which is about half a mile from the London Bridge station,) was run into by the 5.35 a.m., London, Brighton, and South Coast Company's workmen's train from Victoria station for London Bridge, where it was due at 6.41 a.m.

The collision occurred about 6.47 a.m.

Three passengers in the workmen's train have complained of injury.

No injury was sustained by the Company's servants.

The collision occurred between the engine of the workmen's train and the centre vehicles of the empty train. In the latter, which consisted of a tank-engine, running coal bunker in front, and 18 vehicles fitted throughout with the Westinghouse brake, six carriages were slightly damaged and three were knocked off the rails.

In the workmen's train, which consisted of a tank-engine, running chimney in front, and 12 vehicles fitted throughout with the Westinghouse brake, the engine was

slightly damaged and left the rails, and the vehicle next it was lifted off the rails with its front wheels.

A list of damage is given in an Appendix.

Description.

This collision, which is almost identical in the circumstances attending it, with one which occurred on December 19th, 1891, took place about 35 yards on the London Bridge, or up side of No. 4 signal-cabin London Bridge.

The next adjacent signal-cabins are Spa Road on the down side, and "AB" on the up side about 600 yards and 300 yards distant from it. The signalman in No. 4 cabin has to attend to the signalling of no less than six lines of rails, viz., four up lines and two down lines as well as to a crossing from the up main line to the up Croydon line.

The lines are properly signalled; the only signals to which it is necessary to refer being the distant and home signals for the up Croydon line, and those for the crossing from the up main to the up Croydon line. The home-signals are two on the left of a group of up home-signals, and the distant-signals are similarly arranged, and are 370 yards from the up home-signals. The signals for the up Croydon line (on which the workmen's train was travelling) are on the extreme left, and those for the crossing from the up main to the up Croydon line, referring to the route of the empty train, are the next on the left. These signals can be well seen in clear weather.

The collision occurred about 130 yards inside the up home-signals at the fouling point of the crossing from the up main to the up Croydon line with the latter, and about 35 yards on the up side of No. 4 signal-cabin underneath which the up Croydon line passes.

Absolute block-system is in force as regards trains following each other on the same line of rails, but the signalman in No. 4 cabin is allowed to accept at the same time from Spa Road a train on the up Croydon line and another to cross from the up main to the up Croydon line, the home and distant signals being depended on for affording the necessary protection, the interval of space between the home-signals and the fouling point of the crossing being, as before stated, about 130 yards only.

The lines in the neighbourhood of No. 4 cabin are straight and practically level.

Evidence.

1. *John Forward*, signalman; 35 years in the South-Eastern Company's service, signalman 28 years.—I have been 25 years employed in No. 4 cabin, London Bridge. I came on duty at 6 a.m. on the 19th ultimo for eight hours. I had a signal-lad with me who had come on duty at the same time I did His duty is to attend to the block instruments under my directions, and to book the trains. There are 19 levers in the cabin, two point levers, and 17 signal levers, viz., seven up home, two down home, six up distant, and two down distant signal levers. The workmen's train was given on to me from Spa Road at 6.41 a.m., and the empty train at 6.43 a.m., the lines being both clear at this time, but between my cabin and A.B. cabin the up main line was blocked by a South-Eastern engine standing at A.B., the up Croydon line being clear. The weather at this time was a little foggy, but more steam than fog was blowing about. I could see the up home-signals at A.B. box and the Spa Road down distant-signals. The Croydon train was not described from Croydon junction (a cabin on the down side of Blue Anchor) till 6.45 a.m., the empty train being described at 6.43 a.m. I was waiting for these trains to be described before deciding which to send on first, and I kept both home and distant signals at danger till I got the description. At 6.44 a.m. I got three rings on the bell from "A.B." box, meaning that the empty train was to pass from the up main to the up Croydon line. At this time the empty train had about reached the up distant-signals. I did not pull off the up distant-signal (the middle one of the three) for it, but I did pull off the third home-signal from the right, having previously set the crossing. The empty train came on very slowly and passed under the cabin, and as the engine was doing so the engine of the up workmen's train ran over the fog-signals, which were about 15 yards on the Spa Road side of the home-signals, the engines being at this time about 110 yards apart. I had seen nothing of the workmen's train before this. On hearing the fog-signals explode I ran to the window and called to the driver as loud as I could. He told me afterwards that he heard me, and that the steam blowing across had deceived him as to the signals, and that he tried to stop, but too late. I saw the collision take place, the engine of the workmen's train striking the empty train three or four carriages from the front. The collision occurred at 6.47 a.m. I did not attempt to shout to the driver of the empty train, my attention having been directed to the other train. A fog-signalman was stationed at the up home-signals, though the fog hardly needed it, but he had reported himself for fog-signal work, and I took him on.

2. *Sydney J. Pawley*, signal-lad; 17 years old, 4½ years in the South-Eastern Company's service, signal-lad all the time.—I have been working in No. 4 box, London Bridge, about 15 months, and I came on duty there at 6 a.m. on the 19th ultimo for eight hours. My duties are to book the trains and work the block instruments, signalman Forward working the levers. The empty train and the workmen's train were rung on from Spa Road at 6.43 a.m. and 6.41 a.m. respectively, the empty train being described from Croydon junction at 6.53 a.m., and the other at 6.45 a.m. At 6.44 a.m. "A.B." signalman gave three rings on the up local bell, meaning that the empty train was to pass from the up main to the up Croydon line, and at 6.44 a.m. Forward set the road and lowered the home-signal. I cannot say as to the distant-signal. I did not see the empty train or the

workmen's train when the signal was lowered. I first noticed the empty train when it was between the distant and home signals. I noticed the empty train pass under the cabin, and I think the engine had passed before I heard the fog-signals exploded by the workmen's train, which was going faster than the other. On hearing the fog-signals explode, Forward shouted to the driver. I think the engine of the workmen's train struck about the middle of the empty train. There was no fog to require fog-signals, but a fog-signalman was on duty in case fog might come on, it having been foggy during the night. I could see Spa Road down distant-signals, and the London Bridge station lights. I heard the driver of the workmen's train say he had made a mistake as to the signals.

3. *John Young*, platelayer; for the last nine months in the service of the South-Eastern Company, and for four years previously at different times.—I commenced fog-signalling at 8.30 p.m. on the 18th ultimo at the up home-signals of No. 4 cabin, thence during the night I went to "AB" cabin and then returned to No. 4 cabin at 6 a.m. on the 19th, though at this time the fog was not very thick, but there was a good deal of steam hanging about. I had fog-signals down for the up main line when the empty train passed, for though the home-signal was off the distant-signal of "AB" was at danger; the driver passed at a speed of about five miles an hour and I gave him a caution. The home-signal, the third from the right, was taken off some time before the train arrived, but the left-hand signal was never taken off at all. The tail of the empty train had just passed me, when about 20 yards off I first saw the engine of the workmen's train. I had heard the beat of the engine before this, but steam from an engine on the North Kent down line had prevented my seeing it. I had fog-signals down for this train about 15 yards from the home-signal, and as the train passed and exploded them I held up a red light and called to the driver to stop. The workmen's train was running twice as fast as the other train, viz., ten miles an hour, and directly afterwards I heard the brake-blocks go on the wheels; when the collision occurred the tail of the train was about under the home-signals. The driver said that steam had prevented his seeing the home-signal and that he did not see my hand-signal.

4. *William Tomlin*, driver; 17 years in the Brighton Company's service, 15 years driver.—I commenced work on the 19th November at 5.35 a.m. to continue for 8½ hours. I started from New Cross with a tank-engine running coal-bunker in front, and a train of 18 empty vehicles, fitted throughout with the Westinghouse brake. We started about 6.34 a.m., 13 minutes late, waiting for signals, the morning being foggy. We were not stopped by signal anywhere, but found the distant-signal from No. 4 box, London Bridge against us, and had got within about 60 or 70 yards of the home-signal, prepared to stop at it if necessary, when I saw it off, it having been before obscured by fog and steam. I passed it about a walking pace, having run over two fog-signals close to it, but did not see any fog-signalman, as I was looking up at the home-signals and at the "AB" distant-signal, which remained "on." The rails were very slippery and I do not think my speed at the crossing was more than six miles an hour. I heard two fog-signals explode when my engine had just reached the up local line, and very shortly after this came the collision when I had got six carriages on to the up local line. I had thought from the explosion of the fog-signals following each other so quickly that there might be an overrun of the engine and made a remark to that effect to my fireman. I made no difference in my speed, not thinking there would be a collision. No couplings gave way, but two carriages, the seventh and eighth, were knocked off the rails.

5. *John Capon*, fireman; 10 years with the Brighton Company, fireman three year's.—I have been with Tomlin about 13 months, and I was with him on the 19th November, my hours being the same as his. I agree with his evidence, except that I became aware of the other train from our guard putting on the Westinghouse brake when our engine and four or five vehicles had got on to the Croydon line; this brought the speed to a walking pace when the collision occurred.

6. *Thomas Lisker*, guard; seven years service with the Brighton Company, and 2½ years guard. I commenced work on November 19th at 6.20 a.m., to go off duty at 7 p.m., but being off for three hours in the afternoon, we started from New Cross at 6.35 a.m., being retained by fog, with an empty train consisting of 18 vehicles. I was in the rearmost vehicle, a third-class brake-carriage from which I could apply the Westinghouse brake. All signals were clear up to the distant-signal of No. 4 cabin, London Bridge, which we passed at danger. I could not see the home-signals of No. 4 till I was within about 30 or 35 yards of them, when I noticed the third signal from the right, up main to up local line, off. I had heard two fog-signals explode before this when the engine passed over them, the speed being four to five miles an hour. I then heard the engine of the workmen's train pass over the fog-signals just before the engine passed my brake, when it was close to the home-signals; it was going faster than my train, but then began to slow. I was afraid there would be a collision, but I did not put on the Westinghouse brake, and when the collision occurred my brake vehicle was close to the signal-cabin. I saw the fog-signalman just after the fog-signals exploded. I do not think steam was on the engine of the workmen's train when it passed me. I observed the workmen's train checked after the explosion of the fog-signals.

7. *George Wood*, guard; 15 years in the Brighton Company's service, 12 years guard—I commenced work on the 19th at 5.15 a.m. to remain till 1.30 p.m. I started from Victoria punctually with the 5.35 a.m. workmen's train for London Bridge *viâ* Norwood junction. The train consisted of a tank-engine running chimney first and 12 vehicles all fitted with the Westinghouse brake, the third and twelfth vehicles having each a brake compartment, with a guard in each. I was in charge in the third vehicle. The train was heavily loaded. We stopped at all stations, the last stop being at New Cross, which we left at 6.38 a.m., four minutes late, gradually lost owing to fog. We had stopped properly at all stations with the Westinghouse brake. We came from New Cross on the up Croydon line, and the first signal I saw against us was the home-signal of No. 4 London Bridge, *i.e.* the one on the left of the signal-post. I saw this when my carriage was going underneath it, the fog having been so thick that I had not been able to see it before; the speed was from 10 to 12 miles an hour. I had heard the engine explode one fog-signal just before I saw the home-signal. I thought it strange the driver passing the signal at danger, and I applied the Westinghouse brake when I was passing the home-signal, the brake pressure being about 58 lbs. I was, I believe, the first to apply it. It checked the speed to about three miles an hour on the collision taking place. The train stopped dead on striking the other train; the engine was off the rails with all its wheels, and the vehicle next the engine had its front wheels lifted up. The collision occurred at 6.45 a.m. I missed seeing the distant-signal of No. 4 cabin. I saw nothing of the fog-signalman just after the explosion. The driver told me he had made a mistake in the home-signal. After my first applying the brake the driver seemed to release it, and I put it on a second time, and kept the tap open. The rear vehicle was about opposite the home-signal after the collision. The driver appeared to me to be quite sober.

8. *Frank Brookson*, guard; seven years in the Brighton Company's service, 2½ years guard.—I

commenced work on November 19th at 3.35 a.m. to remain till 1.30 p.m. I was rear guard of the workmen's train due to leave Victoria at 5.35 a.m. We left punctually, and last stopped at New Cross leaving it about four minutes late at 6.38 p.m. We had not overrun any station, the driver having made all the stops with the Westinghouse brake. I was looking out, but saw no signals against me, having missed the distant signal of No. 4 cabin, London Bridge, and not having seen the home-signal on account of the fog. The collision took me quite unawares (the speed having been checked with the Westinghouse brake just before) at a speed of four or five miles an hour. I was not knocked down. I had seen nothing at all of the other train before we struck it, nor had I heard any fog-signals explode. I had seen my driver that morning and he appeared perfectly right.

9. *David Taylor*, driver; 14 years in the Brighton Company's service, 4½ years driver.—I am well acquainted with the lines between New Cross and London Bridge, both with the main and local lines. I commenced work on November 19th at 4.30 a.m. to remain till 3.9 p.m., having left work on the 18th at 1 p.m., and having had a good night's rest. My engine was No. 351, a six-wheel, four wheels coupled in front, tank-engine which I have had 12 months. It was running chimney first, the train consisting of 12 vehicles; the engine and train were fitted with the Westinghouse brake. I started punctually from Victoria at 5.35 p.m. and stopped at all stations to New Cross, which we left at 5.38 a.m., four minutes late, losing time from greasy rails. We stopped, without overrunning at any of the stations, with the air brake. After leaving New Cross on the up Croydon line I found all signals clear till I came to the home-signals of No. 4 cabin. I had missed seeing the distant-signal of No. 4 from fog and steam of other engines. I believe I could have stopped at the home-signals of No. 4 cabin, but when within about 20 yards of them I saw one of them off, and not seeing the other three I took it to be mine, viz., the one on the left. I ran over two fog-signals, but thought they meant that the "AB" distant-signal was at danger, and it was only on hearing the signalman in No. 4 box shout, that I knew I was wrong, and I was then close to the box, and the speed was about ten miles an hour. I had shut off steam after missing the distant-signal, and on hearing the signalman shout I applied the brake hard, the pressure on the engine being 75 lbs. and on the train 55 lbs. I was the first to put it on, and I never took it off again. The speed was reduced to about four miles an hour when I struck the other train on the crossing. My engine left the rails and went about its length before stopping. Neither the fireman nor myself jumped off, nor were we hurt. I saw nothing of the empty train till just before the collision. I had not drunk anything that morning. I do not think my fireman saw the fog-signalman. I was on the opposite side to him. The rule is to stop dead on running over a fog-signal; had I done so, I should have avoided the collision.

10. *Alfred Holland*, fireman, six years in the Brighton Company's service, 3½ years fireman. I have been about two years with Taylor, and I was with him on the 19th November. My hours being the same as his. I agree with the driver's evidence. I heard the fog-signalman say something, but did not know what, and it was the signalman shouting that first led us to know we were wrong, and then we tried to stop, the speed having been reduced from ten miles an hour to four or five miles an hour on collision. I first saw the empty train just before running over the fog-signals and thought it was going along the straight line.

Conclusion.

This collision between a workmen's train and an empty train was due to the driver and fireman of the workmen's train having improperly concluded that the up home-signal at No. 4 cabin, London Bridge, which was lowered for the empty train to cross from the up main line to the up local line, was the signal for them to proceed along the up local line on which their train was travelling. These men had both missed seeing the up distant-signal for the up local line owing, they say, to fog and steam; but notwithstanding this and the fact that the engine exploded two fog-signals a short distance before reaching the home-signals (which ought alone to have caused them to stop as soon as possible), they were using so little circumspection that they mistook one home-signal for the other (although these signals are perfectly distinct) and only realised their mistake on hearing the signalman shout to them when their engine was close to the cabin, or about 40 yards from the point of collision. An unsuccessful effort was then made to stop, the speed having been reduced from 10 or 12 miles an hour to three to five miles on collision. The fireman had noticed the empty train running alongside of his own, but did not realise that it was going to cross.

Taylor, the driver of the train, has been a driver about 4½ years, and is well acquainted with the lines between New Cross and London Bridge. He had commenced work about 2¼ hours before the collision for a spell of about 11½ hours, having left work the previous day at 1 p.m., and having had a good night's rest.

Holland, Taylor's fireman, has been 3½ years a fireman and two years with Taylor, his hours of duty being similar. There is no suspicion that either of these men was the worse for liquor.

Wood, the front guard of the train, riding in the brake compartment of the third vehicle from the engine, declares that when passing the up home-signal post of No. 4 cabin he saw the up home-signal for the local line at danger, the fog having prevented his seeing it sooner; that thinking it strange that the driver should be passing the signal at danger he at once applied the Westinghouse brake, the speed being from 10 to 12 miles an hour; that the brake appearing to be released by the

driver, he applied it again and kept it on till the collision occurred, at a speed of about three miles an hour. If this evidence as to the application of the brake is to be depended on, it makes the conduct of driver Taylor still more culpable.

Brookson, the rear guard of the train, riding in the brake compartment of the last vehicle, was taken unawares by the collision, having, he says, owing to the fog, not seen the home-signals, close to which the last vehicle stopped when the collision occurred.

Wood and Brookson had commenced work soon after 5 a.m., to sign off at 1.30 p.m.

No blame is to be attached to the signalman or to the servants in charge of the empty train, which was running at a speed stated to be four or six miles an hour when the collision occurred, except that driver Tomlin ought (according to rule) to have stopped his train on running over the fog-signals near the home-signal post, as he acknowledges to have done. Tomlin has been a driver 15 years, and had come on duty at 5.35 a.m. for 8½ hours.

When reporting on the nearly identical collision which occurred at the same spot about two years since, I made the following remarks :—

"The South-Eastern Company should in my opinion carefully consider whether it would not be possible, without any very serious delay to the up traffic, to alter the rule under which a train may be accepted from Spa Road on the up local line, while a train is signalled to cross from the up main to the local line. There would be no objection to a train being accepted from Spa Road on the main line and having to cross to the local line when a train has been signalled on the local line, as the points of the crossing would prevent a collision in case of the train on the main line overrunning signals."

Had the mode of working then recommended been adopted this second collision would have been prevented, and I trust it will not need a third one to induce the South-Eastern Company to take some means to introduce a safer means of working the traffic at this particular spot. It can hardly be considered a proper system of block-working when the overruning of a home-signal by a distance of about 130 yards leads to a collision.

I would also draw attention to the concluding paragraph of the same report* and again recommend the provision of additional signal-cabins at No. 4 London Bridge, Spa Road and Blue Anchor signal-posts, as at present in each cabin the signalman might possibly have to deal with no less than 12 trains at the same time.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

C. S. Hutchinson,
Major-General, R.E.

APPENDIX.

Details of Damage to Vehicles of Empty Train.

No. 811 third-class.—Derailed, step-board damaged.

No. 769 third-class.—Step-board damaged.

No. 23 first-class.—Derailed, step-board broken and door-handle bent. Westinghouse pipe damaged.

No. 242 first-class.—Stepboard damaged and top side slightly damaged.

No. 320 second class.—Derailed, bottom side panel damaged, sole damaged, step-board and brackets broken.

No. 329 first-class coupé.—Derailed, step-board and brackets broken, sole damaged, side spring broken, one side-chain broken, one axle-box broken, one screw-coupling broken, one axle bent.

Printed copies of the above Report were sent to the Company on the 10th January.

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* Though the signalman in No. 4 cabin is in no respect to blame in the present instance, it seems only right to draw attention to the fact that he might on certain very busy occasions have to deal with no less than 12 trains at one and the same time, viz., with four up trains and two down trains in the block sections on each side of his cabin. At other block posts on the down side of No. 4 cabin two cabins have been provided, each dealing with two up lines and one down line, and I would strongly recommend the same course being adopted with No. 4 Spa Road and Blue Anchor cabins, where the signalmen are now likely under certain circumstances to have more trains on their minds than they can be at all times reasonably expected to deal with without mistake.

SOUTH-EASTERN RAILWAY.

Board of Trade, (Railway Department.)
8, Richmond Terrace, Whitehall, London, S.W.,
18th January 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 19th ultimo, the result of my enquiry into the circumstances connected with the accident which occurred on the 4th ultimo at the Dover end of Shakespeare tunnel near Dover on the South-Eastern Railway.

In this case, as the 5.20 p.m. up boat train from Dover for London, consisting of engine and tender and 10 vehicles, (of which the first and last two were brake-vans,) fitted throughout with the automatic vacuum-brake, was entering the up tunnel at Shakespeare Cliff (about three-quarters of a mile from Dover station) at a speed of about 20 miles an hour, a passenger in the last compartment of the eighth vehicle from the engine, who it is supposed was leaning out of the off-side window to be sick, struck his left temple against the corner of the brick-faced pier at the tunnel mouth (this corner being only about 17½ inches from the side of the carriage) which pier divides the up and down tunnels. He was rendered insensible by the blow. The electric communication was made use of (probably by the passenger's wife, who was with him in the compartment) to stop the train, which was brought to a stand a short distance outside the Folkestone end of the tunnel, when the guards of the train found the passenger on the floor of the compartment unconscious and lying in a pool of blood flowing from the left temple. The train then proceeded to Folkestone, where he was removed to a hospital and is now recovering.

Description.

The up and down lines through Shakespeare Cliff are carried in separate tunnels; these are each 12 ft. wide and are separated by a brick-faced pier 10 ft. thick; in consequence of the wide space between the up and down lines owing to this brick pier, reverse curves have to be introduced at both entrances of both tunnels, and as regards the up line at the Dover end, the distance between the outside of the off rail and the angle of the brick pier is only 2 ft. 11½ ins., that between the near rail and the wall of the up tunnel being 3 ft. 11½ ins., these distances becoming nearly equal a short distance inside the tunnel as soon as the curve has ceased. The same state of things—though with certain modifications, owing to the rails in the down tunnel being throughout nearer to the pier than to the tunnel wall, to accommodate the drainage which is carried along the wall—occurs at the other entrances.

The carriage in which the accident took place is 8 ft. ¾ in. wide, the overhang being consequently about 18 in., thus making the distance between the side of the carriage and the angle of the brick pier about 1 ft. 5½ ins.

Seven feet above rail level there was a fresh mark of a scale having been taken off a brick at the angle of the pier, and it was probably against this brick that the passenger's left temple came into collision. Marks of vomit were found in the 6-ft. space at intervals on the Dover side of the tunnel.

Evidence.

1. *Frederic Stedman*, guard, 16 years' service; ten years guard.—On December 7th I was head guard of the 5.20 p.m. boat train from Dover for London, the first stop being properly at Sandling junction. The train consisted of engine and tender and ten vehicles fitted throughout with the automatic vacuum-brake. We were 44 minutes late in starting. I was in the van next the engine, and the passenger who was injured was in the rear second-class compartment of the eighth vehicle, a composite carriage, behind it there being two vans. I had not seen him before leaving Dover. I believe his wife was with him. We entered the Shakespeare tunnel (about half-a-mile from Dover) at a speed of about 25 miles an hour, and when about three parts through the tunnel, which is 1,400 yards long, the communication bell rang in my van. I looked out at both sides and saw a red light shown from the near side at the rear of the train. The driver had already shut off steam and the train was stopped about 200 yards outside the tunnel; I went back and found the passenger who was injured in the compartment I mentioned. He was on the floor insensible and we lifted him on the seat. We ascertained through his wife that he had had a knock on his head in the tunnel. He had no hat on. I decided to stop at Folkestone and we did so, and he was there removed from the train, accompanied by his wife, and taken to the hospital. He was still insensible when taken from the train and bleeding from the left side of his forehead.

2. *Wesley Allard*, guard, 21 years' service; 14 years guard.—I was under guard of the 5.20 p.m. boat train on December 7th. I was in the ninth vehicle, a van;

a bogie composite was next in front of my van, the injured passenger being in the last second-class compartment of this carriage. I had seen him and a female with him before starting, but noticed nothing unusual about him. I had not seen him leaning out of the carriage before entering Shakespeare tunnel, where our speed was about 20 miles an hour. Just before getting out of the tunnel the communication bell began to ring. I looked out first at the near side and then at the off side but could see nothing. I then heard a woman scream, and on again looking out at the off side I saw the woman leaning out of the window after having emerged from the tunnel. I then gave my mate a red light and the train stopped about a quarter of a mile outside the tunnel. I just shook the automatic-brake to warn the driver. As soon as I could I walked along the foot-board to the off side carriage door and on looking in I saw a man lying on his back in a pool of blood from a wound, I believe, on his left temple. At first I thought he had shot himself, but on getting a gentleman in the next compartment to speak to the woman I found that he had hit his head against something, and I concluded it was against the tunnel wall. He was insensible and remained so till he was removed from the train at Folkestone. He was 5 ft. 8 ins. or 5 ft. 9 ins. high. It was not very dark. His hat was lying on the seat. I sat him up on the seat, and I do not think he bled much afterwards.

Conclusion.

This accident was caused by the off rail of the up line being dangerously near to the corner of the face (at the Dover end) of the pier which separates the up and down tunnels. Each of these tunnels (which were constructed about 50 years ago) is only 12 ft. wide, and is too narrow to afford proper clearance for the rolling-stock now in use, though it was probably wide enough for the purpose with the narrower carriages employed when the line was first opened. Though it would now involve an almost entire reconstruction of the tunnels to obtain the necessary width for modern rolling-stock, there is no reason why the clearance should be unnecessarily reduced on either line, as has been done at each of the tunnel mouths in connection with the curves requisite for widening out the 6-ft. space by the extra 11 ft. necessitated by the thick central pier.

I should, therefore, strongly recommend either carrying back the commencement of these curves so that they may terminate before the tunnels are entered or cutting away the faces of the pier, for the height in which want of clearance is especially dangerous, until the lines have gained their normal position in each tunnel. The additional 5 inches which would be thus obtained, would have been sufficient to prevent the recent accident, as even an additional inch would probably have saved it.

When a somewhat similar (though in that case fatal) accident occurred nearly 15 years ago in a train when entering the down tunnel, the Company were urged to remove the rails of the down line so as to be central in the tunnel, instead of being $11\frac{1}{2}$ inches nearer to the central pier than to the left side wall. This, it was stated, would be very difficult, as it would necessitate lowering a drain and water main which are carried along the left side wall. It would, I submit, be desirable again to draw serious attention to this subject, the present position of the off rail as regards the central pier being almost identical with that on the up line, where the recent accident occurred. At the time of the above-mentioned accident notices, cautioning passengers that it was dangerous to put their heads out of the carriage windows, particularly when trains were passing through tunnels, &c., were posted in many of the carriages, and it was recommended that they should be printed in larger type. Instead of this recommendation being attended to the notices have of late years entirely disappeared, though the danger to which they drew attention still exists. It would be desirable to have these notices again exhibited, as they are certainly as necessary now as they were formerly.

I have, &c.,
C. S. Hutchinson,
Major-General, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

Printed copies of the above Report were sent to the Company on the 4th February.

WEYMOUTH AND PORTLAND RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
29th December 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 21st ultimo, the result of my enquiry into the circumstances connected with the accident which occurred on the 6th ultimo near

the Weymouth station end of the Backwater Viaduct on the Weymouth and Portland Railway, which is leased by the Great Western and London and South-Western Railway Companies.

In this case, as the 4 p.m. London and South-Western Company's passenger train from Portland for Weymouth was approaching the Weymouth station end of the Backwater Viaduct the left wheels of the engine and of five out of the six carriages composing the train (which was fitted throughout with a continuous-brake) dropped inside the left rail at a spot about 63 yards from the Weymouth end of the viaduct, the engine stopping about 90 yards from the first mark of derailment.

No passengers or servants of the company were injured, nor was any damage sustained by the rolling-stock.

In the permanent way two rails were bent and had to be replaced, and several fang-bolts were broken.

Description.

The Weymouth and Portland Railway is maintained entirely by the Great Western Railway Company, but the passenger train service is worked for a year at a time by one or other of the leading companies, the London and South-Western Company being this year the working company.

The accident occurred on a wooden viaduct across Weymouth Backwater. The viaduct consists of 66 openings of about 21 ft. each of the usual construction for viaducts of this character. The line (which is single) is on a curve to the left (when looking towards Weymouth station) of 23 chains radius, and on gradients falling towards Weymouth of 1 in 116 and 1 in 98, the latter commencing near the centre of the viaduct.

The permanent-way consists of steel bridge-rails in lengths of 27 ft. and 32 ft., weighing 68 lbs. to the yard, fished at the joints with the Great Western Company's joint-plates. The rails are secured to longitudinal timbers measuring 14 ins. by 7 ins., by fang-bolts at about 2 ft. intervals alternately inside and outside the rails. The longitudinals are connected by transoms (7 ins. by 5 ins.) and straps, 11 ft. apart. Packing, 1 in. thick, is placed between the bottom of the rails and the longitudinals. The superelevation of the outer rail of the curve was about 3 ins., and the gauge about half an inch slack when I visited the spot, and this is said to have been the state of the superelevation and gauge at the time of the accident.

The rails and timbers are in good condition, and the ballast between the longitudinals and the floor of the viaduct is dry and sufficient.

The first mark of anything wrong was observed at a spot 63 yards from the station end of the viaduct, where a joint on the inner or low rail was strained outwards; from this joint the low rail was gradually forced outwards on the longitudinals for a length of about 12 ft. when a wheel—presumably the left leading wheel of the engine—dropped inside the rail, along the inner bottom flange of which (forcing it and the following rails outwards), it and the succeeding left wheels of the engine and five vehicles next it ran, until the engine stopped about 90 yards from the first mark. The right wheels of the engine had remained on the high rail. There was hardly any appreciable disturbance in the position of the longitudinals under the low rail, and no straps were broken. The high rails were but slightly affected except as regards the two rails opposite the spot where the accident commenced, which were slightly bent outwards.

The engine which drew the train is an eight-wheeled tank-engine with the leading and driving wheels coupled, and a four-wheeled trailing bogie. The wheel base of the coupled wheels is 6 ft. 10 ins., and of the bogie wheels 5 ft., the distance between the centre of the driving axle and the bogie-pin being 11 ft. The weights on the wheels are as follows:—

——	Leading.	Driving.	Bogie.	Total.
	Tons.	Tons.	Tons.	Tons.
Loaded -	14·525	15·00	15·25	44·775
Empty -	12·425	13·425	11·65	37·500

The engine was last in the shops in March last, when the wheels were all turned up. The flanges appeared to be in good order and the springs to have received no damage from the accident.

Evidence.

1. *Alexander William Simmons*, driver; 14 years in the service of the London and South-Western Company, nine months driver.—I have been three years fireman on the Weymouth and Portland line and about seven months driver. I signed on duty at 8.45 a.m. on the 6th November, to sign off at 5.15 p.m. I had made three trips to Portland and was completing the third one back when the accident occurred. My engine was No. 180, an eight-wheeled engine, with four leading wheels coupled, and four wheeled trailing bogie. I had often worked the engine on previous occasions, but it is not my regular engine. On the occasion of the accident I was driver of the 4 p.m. train from Portland; the engine was running chimney in front, and my train consisted of six vehicles, including a third-class brake-carriage at each end of the train, the guard being in the rear one. The train was fitted throughout with the automatic steam and vacuum-brake applying to the four coupled wheels of the engine. I had had the same train and engine all day. On the previous five journeys I had felt nothing wrong at the spot where the accident afterwards occurred. I left Portland punctually, stopped at Rodwell at 4.10 p.m., and was crossing the viaduct at about the authorised speed of 10 miles an hour. I had shut off steam just after leaving Rodwell and never reapplied it. Neither vacuum nor hand-brakes were on; when on arriving within about 60 yards from the end of the viaduct the engine gave a slight jerk with the feeling of a rise. I said to my mate, "What's that," and he said, "We are off the road." I was standing on the right side of the engine. I at once applied the brake, the vacuum showing 17 inches, and I brought it down to 10 and kept it there and pulled the train up in from 70 to 75 yards. I found the engine with all four wheels on the left side off the left rail and rubbing against the inside of the rail with the flanges on the longitudinal. The right wheels were all on the high rail. No couplings had broken. The five carriages next to the engine were also off the rails, but I cannot say in what position; and the last vehicle was, I believe, on the rails. The engine had been running steady before I felt the jerk, and I am sure I had felt nothing like it on either of the five previous journeys. No other train had been running on the line on that Sunday. There had been heavy rain more or less every day of the previous week. I had been working on the line during the week, and had neither felt anything wrong nor seen any platelayers at work near the spot. I did not go back to the spot where the engine left the rails. The engine had received no damage whatever that I could see. The flanges were correct to gauge.

2. *Charles Strange*, fireman, nine years with the London and South-Western Company, fireman 2½ years.—I have been Simmons' fireman three or four months, and I was with him on the 6th November, when my hours were the same as his. My place was on the left side of the engine. I agree with the driver's evidence up to the time of the accident except that I think speed had been checked on coming over the Portland end of the viaduct, which is under repair. I first felt a drop on the left side without any previous oscillation. On feeling the drop I looked over the left side and saw the two left front wheels inside the low rail. I called to my mate to stop as we were off the road, he applied the vacuum-brake cautiously and stopped just beyond the viaduct. All the left wheels were off and close up to the inside of the low rail, but the right wheels were on the high rail. The left wheels of all the vehicles except the last part were off similarly to the engine-wheels. I went back and found a distinct spot where a wheel had dropped in, the bolts being strained. I could not see anything to account for this. I felt the engine first drop and not rise.

3. *Edward Tomlinson*, guard, 26 years' service with the Joint Companies, 25 years guard.—I signed on at 9.15 a.m. on the 6th November to sign off at 9.45 p.m. I had made three trips to Portland and was completing the third back when the accident took place. The train was the 4 p.m. from Portland, consisting of six vehicles, the first and last brake-carriages; I was in the last one from which I could apply the vacuum-brake. There were 40 or 50 passengers in the train. We started punctually and left Rodwell about 4.12, two minutes late, slacking to a slow speed on the viaduct, at which speed we were running, when we were gradually pulled up when near the end of the viaduct. At first I did not know why we had stopped, but afterwards found we were off the low rail of the curve, with the exception of the trailing wheels of my brake-carriage. I saw the spot where the engine-wheels had dropped in, but could see nothing to account for it. The rear vehicle was rather more than a carriage length from the spot. The day was fine, but there had been wet previously. The accident occurred about 4.16. No passengers complained of injury.

4. *James Spencer*, ganger of the Weymouth yard; 27 years in the Great Western Company's service, 12 years ganger.—I got to the spot about 6 p.m., at which time nothing had been done to the road. The wheels of the vehicles which I saw off the rails were rubbing hard against the inside of the left rail, the tread of the wheel on the flange of the rail and the flange of the wheel on the longitudinal. I saw the place where a wheel had first dropped inside, the rail and some of the packing being pushed out about three inches. The longitudinal was very slightly disturbed, and no straps were broken. The rail prior to this mark was thrown out of gauge for a distance of about 11 or 12 feet. No rail was broken on either side, but two high rails opposite the spot and both together were slightly bent outwards in bulges. The left rails were all replaced, one being turned end for end. The right rails were not touched till the following day, when these were replaced, as taking less time than straightening them. No longitudinals, transoms, or straps had to be renewed. All the fang-bolts on the bow rail had to be renewed, the heads as a rule being sheared off. No joint-plates were broken. I could see no way to account for the accident. The ballast under the low longitudinal seemed to be very firm, not wet. I had to tighten up some of the strap-bolts slightly, not so much as a quarter of an inch.

5. *George Coombs*, ganger; 20 years in the Great Western Company's service, 11 years ganger of the length from Weymouth for about 2¼ miles towards Portland.—I reached the spot about 4.30 p.m. on the 6th November. The description of the position of the train has been correctly stated. There was no mistaking the place where a wheel first dropped in. The gauge was there 4 ft. 11½ ins., gradually diminishing to 4 ft. 8½ ins. in about 12 feet. The rail and not the longitudinal was displaced. The ballast under the low longitudinal was not in a state of slush, but much as it is now. I had last walked the road about 9 a.m. and I saw nothing wrong then. Nothing had been done to the road for a week, when some picking up of slack places had been attended to. No serious repairs had been done for some time. I have no

reason to complain of high speed recently, since it was here reduced to 10 miles an hour six or eight months ago, when the repairs now in progress at the Portland end were commenced. I have no idea what caused the accident. I found no obstruction on the rails.

Conclusion.

This accident was caused by the fastenings of a low rail, commencing at a joint and extending for a distance of about 12 feet from it, having given way outwards (owing to some unusual pressure,) sufficiently to allow the left leading wheel of the engine to drop inside this low rail; the remainder of which low rail and the succeeding low rails being then forced outwards until the engine stopped about 90 yards from the first mark of displacement, when all the left wheels of the engine, and of five of the six vehicles following it (the sixth had stopped short of displacement) were found to be rubbing against the inside of the low rail with the outside of their flanges, the right wheels remaining on the high rail.

It is difficult to account for the unusual pressure which must have been exerted on the low rail to cause the fastenings to give way as they must have done.

The superelevation of the outer rail, which is about three inches, is no doubt far more than is necessary for a curve of 23 chains radius, and a speed (which was probably not being exceeded on the present occasion) of 10 miles an hour. This amount of superelevation is suitable to a speed of about 34 miles an hour, and it might well be reduced to half an inch, so long as a speed of 10 miles an hour is not exceeded. The effect of the excess of superelevation would be of course to tend to produce pressure on the inside of the low rail, but as this alone would not have sufficed to overcome the resistance of the bolts holding the rail in its place, I am of opinion that from some unexplained cause, the engine must have lurched heavily against the low rail between the joint and the place where a wheel first dropped in. the resistance of the fastenings having been thus overcome.

I could see nothing in the condition of the engine or in the state of the permanent-way —other than the unnecessary amount of superelevation—to account for the accident. The timbers of the viaduct, about the condition which there seems to be some uneasy feeling in Weymouth, appear to be in a fair state of preservation, and the necessary repairs to be duly attended to.

As a means of guarding against a further similar accident, it would, I think, be wise to considerably reduce the amount of superelevation of the outer rail of the curve, and also to introduce steel or iron gauge ties to tie the flanges of the rails together.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

C. S. Hutchinson,
Major-General, R.E.

Printed copies of the above Report were sent to the Great Western and London and South-Western Railway Companies on the 17th January.

WIRRAL AND MERSEY RAILWAYS.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
25th November 1892.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 3rd instant, the result of my enquiry into the collision that occurred on the 1st idem, at Park (Joint) station at Birkenhead, on the Wirral and Mersey Railways.

On this occasion, as the Wirral Company's 8 p.m. train from Birkenhead Park to New Brighton was standing at the main down platform at the former place it was run into in rear by a light engine belonging to the same company, which had been crossed from the up main line to the down main line, and was running through the station in order to be attached to a train for Liverpool, which was then standing at the down loop platform.

Forty-one passengers are reported to have complained of minor injuries to themselves or their clothing.

The New Brighton train consisted of a side-tank engine, having four wheels coupled and a trailing bogie, and six vehicles, and both engine and train were fitted with the

automatic vacuum-brake. The light engine was a side tank-engine with four wheels coupled, leading bogie and trailing radial axle, and it also was fitted with the automatic vacuum-brake, working blocks on the four coupled wheels.

No damage was done to the engines, rolling-stock, or permanent-way.

Description.

Birkenhead Park station is the joint property of the Wirral and Mersey Railway Companies, and the working of it is managed by a committee of the two lines. There are four passenger lines running through it, viz., an up loop, an up main, a down main, and a down loop, and there are two island platforms. At the east (or Liverpool) end of the platforms there is a short tunnel 41 yards in length, and about 127 yards outside this tunnel are the east junctions between the main lines and the loop lines just mentioned. Between these junctions and the tunnel is a cross-over road between the up and down main lines, with trailing-points on each line; and there is an electric gong fixed near the junction of the main and loop lines, by means of which the signalman is able to communicate with engine-drivers who may be waiting to shunt from one line to the other. The signal-cabin is in the middle of the down main platform. There is a rising gradient from the east of 1 in 60 up the outer end of the tunnel, and the line is level through the tunnel and station. The train which was struck was standing at the down main platform waiting for the starting-signal to be lowered to enable it to start to New Brighton. The tail of it was 42 yards from the inner (or western) end of the tunnel. The engine which collided with this train had just arrived with an up train from West Kirby to Liverpool, and was running through the station in order to be attached to a down train from Liverpool to West Kirby, while the engine of the latter train, being one of the special type for working the traffic through the Mersey tunnel, was to be attached to the up train and work it into Liverpool.

There was a thick but shifting fog, and the trains were all one or two minutes late.

Owing to the tunnel the signalman is unable to obtain a good view of the points beyond it, or to communicate verbally or by hand-signals with drivers who may be waiting at the points. For this reason the gong already referred to has been fixed, and a code of gong signals is in force, by which a driver is informed whether he is to shunt from the up main, to the up loop, or to the down main.

Evidence.

Thomas Simpson, foreman porter at Park joint station, states: I have been in the Company's service in the position of foreman since September 6th, and previous to that I have acted as signalman on the Lancashire and Yorkshire, London and North-Western, and Cheshire Lines Committee for about 14 years. I came on duty on Tuesday, November 1st, at 1 p.m., and remained in charge of the station until the last train. I came off duty at midnight on the 31st October. At 8 p.m. the New Brighton train (8 p.m. Park to New Brighton) stood at the down main platform. The coaches forming the train arrived at the platform from Liverpool at 7.25 p.m. The train waits the arrival of the 7.47 p.m. from Liverpool Central due at Park at 7.58 p.m., the through train from Liverpool forming the 8.4 p.m. to West Kirby, the passengers for New Brighton changing at Park. I was attending to the change of passengers and had completed the transfer and went to the front of the New Brighton train and saw the signal off for the train to leave, when, as I turned round to give the guard a signal to start, the Wirral engine No. 1 collided with the rear of the train. The force sent the train a little forward. Several passengers complained of being hurt and a number of the lights in the train were extinguished, which I had relighted. I examined the train but could not find any damage done except one or two windows broken, and the rear van door slightly strained. The passengers were then got into the train and despatched to New Brighton. The engine which caused the collision arrived with a train from West Kirby and was being crossed over from the up loop to work the through train from Liverpool at 8.4 p.m. from Park to West Kirby, in ordinary course. There was a slight fog at the time, but I could see the length of the platform. The Mersey Railway fogmen were sent for at 7.30 p.m. to come on duty, as I considered the fog sufficiently dense to warrant their being out. They arrived at 8.15 p.m. When the down main starting-signal was off I could not see the light, but before giving the guard a signal I went forward to the engine and then saw the green light. The tail-lamp of the train run into was showing red and was burning and in good order.

James Charles Thatcher, signalman at Park joint station, states: I have been signalman at Park for about six months; previous to this I was a relief signalman for 2½ years. I have been 5½ years in the service of the Mersey Railway Company, and six months with joint companies. On Tuesday November 1st I came on duty at Park station at 2 p.m. for a 10-hour spell. The 7.40 p.m. train from West Kirby due in Park at 8.1 p.m. arrived in the up loop at 8.2 p.m. or one minute late. After the engine had been uncoupled it was run on to the up main line over No. 22 points. The driver gave a whistle for the points to be reversed, but to make sure I waited until he whistled again. He whistled again and I then reversed the points and set the cross-over road for the down main line. I gave him one long ring on the electric bell in the usual course to set back, and he did so and came into collision with the New Brighton train standing at the down main platform. There is no indication given to the engine-driver when a train is standing at the platform. At the time the collision occurred, my down main starting-signal was off for the New Brighton train to leave. The New Brighton

train was ready to leave at 8.3 or 8.4 p.m. and left at 8.16 p.m. The West Kirby train left at 8.20 p.m. The train due from Liverpool Central at 7.58 p.m. arrived at 8 p.m. The Mersey Company's engine working the 7.58 in, was standing at the platform at the up main starting-signal at the time of the collision. It is our usual practice to allow an engine to cross over from the up main to the down main by the south cross-over road when trains are standing at the down main platform. At 7.30 p.m. I spoke to the foreman and asked him to send for the Mersey Company's fogmen as the fog was coming on and they arrived at 8.15 p.m. The Wirral Company's fogmen were on duty at their posts at 7.30 p.m. At 8 p.m. the fog was not very thick as I could see the Wirral Company's engine headlight when running over the crossing from up to down main. I did not notice the Mersey engine letting off steam.

Joseph Thomas, engine-driver, states: I have been about 11 years in the service of the Wirral Railway Company, and an engine driver during the whole of that time. On Tuesday November 1st, I came on duty at 2.45 p.m., and took charge of engine No. 2. At 8 p.m. I was attached to the New Brighton train, and was waiting the signal to start when the collision occurred. I could not see the starting-signal as the fog was too thick. I saw the foreman pass my engine going towards the starting-signal, and when he came back he gave the guard a signal with his hand-lamp. At this moment the collision occurred. The brakes of the engine and train were all off at the time, and the force of the blow sent the train forward about a yard. The fog was so thick that I could not see the length of my train.

John Hignett, engine-driver, states: I have been in the service of the Wirral Company since January 1888 as engine driver. I had previously been in the Company's service for about seven years from 1874 to 1881, when I left to join the North Stafford Steam Tramways. On Tuesday November 1st, I came on duty at 2.30 p.m. and took charge of engine No. 1, having come off duty at 12.15 a.m. the same morning. I worked the 7.40 p.m. from West Kirby to Park, where we arrived in the up loop at 8.2 p.m. The engine was uncoupled from the train and the shunt-signal lowered for the up main line. I moved the engine forward to the up main line. I sounded the whistle for the cross-over road points, and not getting any reply on the gong, I whistled a second time. The gong was then sounded, and I set back on to the down main line. On approaching the Duke Street Bridge I saw no lights or any indication to show there was a train standing at the down main platform and not until I got within 15 or 20 yards did I see anything in front, and then I saw the tail-light of the train standing at the platform. At the time I caught sight of the train I was running between four and five miles an hour. I at once applied the vacuum-brake and reversed my engine, but could not stop until I struck the train, which I did at a speed of about three miles per hour. I was running with my engine bunker first. There was not the slightest damage done to my engine. I shut off steam before I had got over the cross-over road, and did not again apply steam before the collision occurred. The weather was foggy and very thick under the Duke Street Bridge. I could not see my engine length. I had worked this train (the 8.4 p.m. Park to West Kirkby) during last winter, but had not done so before this winter. When I received the gong at the south end of the station, I was under the impression that the road was clear for me to run through to the down main starting-signal, and I was running accordingly. I should have stopped my engine in time had the rails not been so greasy, as the wheels of the engine were skidded.

John Hughes, fireman to driver Hignett, states: I joined the service of the Wirral Railway Company in April 1891, and acted as fireman since June 1891. On Tuesday November 1st I came on duty at 2.30 p.m. and worked with driver Hignett on engine No. 1. The weather was very thick on our arrival at Park at 8.2 p.m. I corroborate driver Hignett's evidence.

Llewellyn Myddleton, engine-driver, states: I have been in the service of the Mersey Railway Company for about seven years as engine-driver. On Tuesday November 1st I worked the train due in Park from Liverpool at 7.58 p.m. My engine stood at the up main starting-signal when the Wirral Company's engine was crossing over from the up loop to the down main line. I heard the engine coming under the bridge, and, as I thought it was coming too fast, I shouted to the driver, "Whoa!" three times as hard as I possibly could, thinking that he was under the impression that the down main line was clear up to the starting-signal. When the engine was running under the bridge, he would be running at a speed of from eight to ten miles per hour. The driver reduced his speed at once and was running at about six miles per hour when he struck the train. The fog was very thick and I could not see more than an engine's length.

Conclusion.

This collision must be attributed to want of caution on the part of driver Hignett, who, in spite of the fog prevailing at the time, ran through the station at too high a rate of speed.

Driver Hignett had just brought in a train from West Kirby for Liverpool, having arrived one minute late. His engine was detached from the train in order that one of the Mersey Company's engines might be attached to the train in order to work it into Liverpool through the tunnel. Hignett's engine was then to be attached to a return train to West Kirby, which was standing in the down loop. In order to reach this train he had to run from the up loop on to the up main line, then through the cross-over road to the down main line, then along the down main line as far as the points at the west end of the station, and lastly, he had to set back through these points on to the down loop, where his train was standing. This is the regular mode of working. Under ordinary circumstances the down main line would be clear while this operation is in progress, as the New Brighton train (*i.e.*, the one which was run into) is due to leave the station at 8 p.m., one minute before the train from West Kirby should arrive. But owing to the fog the New Brighton train was late in starting, and was still standing at the down platform when driver Hignett ran through the cross-over road on to the down line He seems to have assumed that the down line was clear, but he could only see a very few yards ahead, and it was his duty to run through the

station with caution, and at such a speed that he could stop short of any obstruction which might exist. The rules bearing on the subject are as follows: 49 D, " . . . . " Engine-drivers of trains when within station limits must have their engines under " such control as to be able to stop clear of points and crossings, or of any obstruction " there may be, should the signals at any of the intermediate signal-boxes not be " lowered for the passage of their trains." 277. " . . . . . The engine-driver " must not, however, trust entirely to signals, but must on all occasions be vigilant " and cautious."

The former rule is perhaps not, if taken alone, strictly applicable to the present case, as there are no fixed signals in connection with the cross-over road which would protect a train standing at the down main platform. But the two rules taken together are clearly intended to impress upon drivers the necessity of at all times moving with caution within station limits, and in times of fog such caution is more than ever essential.

Hignett saw the train in front of him as he emerged from the tunnel into the station, it being then about 42 yards off. He at once applied his brake and did all he could to stop his engine, but failed to do so in time. He says he was running at four or five miles an hour when he first saw the train, but if this was the case he should have had no difficulty in stopping his engine before it struck the train. The probability is that he was travelling at a much higher speed than stated.

Hignett has been with the Wirrall Company on and off for 11 years, and he had been on duty for 5½ hours at the time of the collision.

As regards the signalman's action in allowing the light engine to run on to the down line, when there was a train already standing at the platform, it appears that this mode of working is sanctioned by the instructions in force at the station, and I am therefore of opinion that he cannot be held to blame for doing so on this occasion. Rule 49 B lays down that, " where the traffic through any station is worked under " special instructions, the signalman before lowering a signal for a train to enter the " station, must satisfy himself that the line is clear to the point the train has to run " to, but if he be in doubt, or if there be another train at the platform to which the " train has to run, he must stop the train and caution engine-driver both verbally and " by hand-signals, before he allows it to enter the station." Although this rule applies more strictly to a second train entering a station already occupied by another train, similar precautions would seem to be necessary when a light engine is allowed to run up to a platform at which a train is already standing. But there are no fixed signals for the cross-over road and the signal-cabin is so situated at Park station that it is quite impossible for the signalman to caution the driver " verbally and by hand-signal," when there is a train ahead of him. On clear days the driver can generally see for himself the state of the line ahead, but there is always the probability of the tunnel being full of steam and smoke, thus obscuring the view, and on foggy days of course the driver can see nothing. It therefore seems to me to be very desirable that some means should, if possible, be adopted for indicating to the driver before he sets back through the cross-over road, whether he may expect to find the down line clear up to the starting-signal or not. This might be effected either by a fixed signal or by an amplification of the existing code of signals on the electric gong already mentioned. If any reasons exist against the adoption of either of these suggestions, special instructions should be issued, prohibiting in time of fog the crossing of an engine from the up to the down line, while a train is standing at the down platform.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

H. A. Yorke,
Major, R.E.

Printed copies of the above Report were sent to the Wirral and Mersey Railway Companies on the 13th December.

RAILWAY ACCIDENTS.

RETURNS

OF

ACCIDENTS AND CASUALTIES

AS REPORTED TO THE BOARD OF TRADE BY THE SEVERAL RAILWAY COMPANIES IN THE UNITED KINGDOM,

During the Three Months ending 31st March 1893,

In pursuance of the Regulation of Railways Act (1871), 34 & 35 Vict. cap. 78;

TOGETHER WITH

REPORTS OF THE INSPECTING OFFICERS OF THE RAILWAY DEPARTMENT TO THE BOARD OF TRADE

UPON

CERTAIN ACCIDENTS

Which were inquired into.

Presented to both Houses of Parliament by Command of Her Majesty.

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TABLE OF CONTENTS.

Page

SUMMARY of ACCIDENTS and CASUALTIES reported to the BOARD of TRADE during the Three Months ending 31st March 1893 - - - - - - - 3

TABLES:

No. 1. General Total.—Number of Persons reported as killed or injured on the Railways of the United Kingdom, distinguishing between Passengers, Servants of the Companies or of Contractors, and other Persons; and distinguishing also in the case of the two former Classes between Accidents caused by accidents to trains, rolling-stock, permanent-way, &c., and Accidents happening otherwise - - - - - - - - - 7

No. 2. Number of Persons reported as killed or injured in the United Kingdom, by the travelling of trains or the movement of vehicles used exclusively upon Railways, distinguishing between Passengers, Servants of Railway Companies, and other Persons; and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury - 8

No. 3. Accidents to Trains, Rolling-Stock, Permanent-Way, &c. on the Railways in the United Kingdom, distinguishing the different Classes of Accidents, and the Number of Passengers and others, and of Servants of Railway Companies, killed or injured in each Class of Accident - 9

No. 4. Accidents to Trains, Rolling-Stock, Permanent-Way, &c. on the Railways in the United Kingdom, distinguishing the different Classes of Accidents, the different Railways on which the same have occurred, and the Number of Passengers and others, and of Servants of Railway Companies, killed or injured on each Railway by those Accidents - - - 10

No. 5. Number of Servants of Railway Companies and Contractors reported as killed or injured on the Railways in the United Kingdom, by the travelling of trains or the movement of vehicles used exclusively upon Railways, distinguishing the Number which have occurred on each Railway or System of Railway, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury - - - - 14

No. 6. Table showing the different occupations of Servants of Railway Companies and Contractors who were killed or injured, and classifying their injuries as far as practicable - 18

No. 7. Number of Persons reported as having been killed or injured whilst upon the Companies' premises, by accidents in which the movement of vehicles used exclusively upon Railways was not concerned, distinguishing between Passengers, Servants of Companies, and other Persons; and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury - - - - - - - - 19

REPORTS ON ACCIDENTS INQUIRED INTO - - - - - - 21

Summary of Accidents and Casualties which have been reported to the Board of Trade as having occurred upon the Railways in the United Kingdom during the Three Months ending 31st March 1893.

I.—Accidents to Trains, Rolling-Stock, Permanent-Way, &c.

Accidents to trains, rolling-stock, permanent-way, &c. caused injury to 138 persons, viz. :—

	Killed.	Injured.	*Total for the corresponding Period in 1892.*	
			Killed.	*Injured.*
Passengers	—	121	—	*113*
Servants of companies	—	17	*2*	*23*
Total	—	138	*2*	*136*

During the three months there were reported 6 collisions between passenger trains or parts of passenger trains, by which 11 passengers were injured; 12 collisions between passenger trains and goods or mineral trains, &c., by which 46 passengers and 3 servants were injured; 4 collisions between goods trains or parts of goods trains, by which 5 servants were injured; 12 cases of passenger trains or parts of passenger trains leaving the rails, by which 1 passenger was injured; 4 cases of goods trains or parts of goods trains leaving the rails, by which 1 servant was injured; 8 cases of trains running into stations or sidings at too high a speed, by which 59 passengers and 3 servants were injured; 40 cases of trains running over cattle,* or other obstructions on the line by which 2 passengers were injured; 8 cases of trains running through gates at level crossings; 4 cases of the failure of machinery, springs, &c., of engines; 121 failures of tyres, by which 2 passengers were injured; 44 failures of axles; and 7 failures of couplings, by which 5 servants were injured.

The following cases were also reported, but they involved no personal injury:—97 failures of rails; 3 slips in cuttings or embankments; and 3 fires at stations.

Of the 121 tyres which failed, 6 were engine-tyres, 3 were tender-tyres, 2 were coach-tyres, 3 were van-tyres, and 107 were waggon-tyres; of the waggons, 85 belonged to owners other than the Railway Companies; 62 tyres were made of iron, and 59 of steel; 3 of the tyres were fastened to the wheel by Mansell's patent method, 1 of which left its wheel when it failed; 1 by Gibson's patent method; 91 by bolts or rivets, 2 of which left their wheels when they failed; 21 by other methods, 1 of which left its wheel when it failed; and 5 by methods which were not stated; 16 tyres broke at rivet-holes, 50 in the solid, and 55 split longitudinally or bulged.

Of the 44 axles which failed, 25 were engine axles, viz., 19 crank or driving, and 6 leading or trailing; 3 were tender axles, and 16 were waggon axles; of the waggons, 5 belonged to owners other than the Railway Companies. Of the 19 crank or driving axles, 7 were made of iron and 12 of steel. The average mileage of 7 crank or driving axles made of iron was 292,678 miles, and of 11 crank or driving axles made of steel 370,159 miles.

* During the three months, 14 horses, 6 beasts and cows, 29 sheep, 1 pig and 1 donkey were run over and killed, and 3 sheep were injured.

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Of the 97 rails which broke, 39 were double-headed, 51 were single-headed, 1 was of the bridge pattern, and 6 were Vignoles' rails; of the double-headed rails 24 had been turned; 4 rails were made of iron and 93 of steel.

II.—Accidents to Passengers from Causes other than Accidents to Trains, Rolling-Stock, Permanent-Way, &c., including Accidents from their own want of Caution or Misconduct; Accidents to Persons passing over Level-Crossings; Trespassers; and Others.

Of the 113 persons killed and 226 injured in this division, 23 of the killed and 170 of the injured were passengers. Of these 6 were killed and 10 injured by falling between carriages and platforms, viz., 3 killed and 4 injured when getting into, and 3 killed and 6 injured when alighting from, trains; 3 were killed and 109 injured by falling on to platforms, ballast, &c., viz., 2 killed and 16 injured when getting into, and 1 killed and 93 injured when alighting from, trains; 8 were killed and 8 injured whilst passing over the line at stations; 12 were injured by the closing of carriage doors; 2 were killed and 6 injured by falling out of carriages during the travelling of trains; and 4 were killed and 25 injured from other causes. 8 persons were killed and 4 injured whilst passing over railways at level-crossings, viz., 3 killed and 2 injured at public level-crossings, 4 killed at occupation-crossings, and 1 killed and 2 injured at foot-crossings. 49 persons were killed and 38 injured when trespassing on the railways; 26 persons committed suicide on railways; and of other persons not specifically classed, but mostly private people having business on the companies' premises, 7 were killed and 14 injured.

III.—Accidents to Servants in the Employ of Railway Companies or Contractors, caused by the Travelling of Trains or the Movement of Vehicles used exclusively upon Railways.

During the three months there were 121 servants of companies or contractors reported as having been killed and 741 injured, in addition to those included in Division I. Of these 2 were killed and 93 injured whilst coupling or uncoupling vehicles; 3 were killed and 6 injured by coming in contact, whilst riding on vehicles during shunting, with other vehicles, &c. standing on adjacent lines; 7 were injured whilst passing over or standing upon buffers during shunting; 5 were killed and 55 injured in getting on or off, or by falling off engines, waggons, &c. during shunting; 41 were injured whilst breaking, spragging, or chocking wheels; 6 were injured whilst attending to ground-points, marshalling trains, &c.; 7 were killed and 76 injured whilst moving vehicles by capstans, turntables, props, &c. during shunting, and 21 were killed and 148 injured by various other accidents during shunting operations; 9 were injured by falling off engines, &c. during the travelling of trains; 9 were injured by coming in contact with over-bridges or erections on the sides of the line during the travelling of trains; 1 was killed and 23 injured whilst getting on or off engines, vans, &c., during the travelling of trains; 3 were killed and 123 injured whilst attending to, or by the failure of, machinery, &c. of engines in steam; 17 were killed and 26 injured whilst working on the permanent-way, sidings, &c.; 2 were injured whilst attending to level-crossing gates; 41 were killed and 48 injured whilst walking, crossing, or standing on the line on duty; 4 were killed and 10 injured by being caught between vehicles; 4 were killed and 17 injured by falling or being caught between trains and platforms, walls, &c.; 11 were killed and 3 injured whilst walking, &c. on the line on the way home or to work; and 2 were killed and 39 injured from various other causes.

Altogether, the number of persons killed and injured on railways in the United Kingdom in the course of public traffic, during the three months ending 31st March 1893, as reported to the Board of Trade, was as follows :—

	Killed.	Injured.	*Total for the corresponding Period in 1892.*		Increase.		Decrease.	
			Killed.	*Injured.*	Killed.	Injured.	Killed.	Injured.
Passengers :								
From accidents to trains, rolling-stock, permanent-way, &c.	—	121	—	*113*	—	8	—	—
By accidents from other causes -	23	170	*31*	*179*	—	—	8	9
Servants of companies or contractors :								
From accidents to trains, rolling-stock, permanent-way, &c.	—	17	*2*	*23*	—	—	2	6
By accidents from other causes -	121	741	*130*	*686*	—	55	9	—
Persons passing over railways at level-crossings.	8	4	*17*	*4*	—	—	9	—
Trespassers (including suicides) - -	75	38	*75*	*31*	—	7	—	—
Other persons not coming in above classification.	7	14	*14*	*18*	—	—	7	4
Total - - - -	234	1,105	*269*	*1,054*	—	51	35	—

Note.—In addition to the above, the Railway Companies have reported to the Board of Trade, in pursuance of the 6th Section of the Regulation of Railways Act, 1871, the following accidents which occurred upon their premises, but in which the movement of vehicles used exclusively upon railways was not concerned, namely :—2 passengers killed and 36 injured whilst ascending or descending steps at stations; 11 injured by being struck by barrows, falling over packages, &c. on station platforms; 10 injured by falling off platforms; and 1 killed and 15 injured from other causes. Of servants of companies or contractors, 2 killed and 342 injured whilst loading, unloading, or sheeting waggons; 49 injured whilst moving or carrying goods in warehouses, &c.; 1 killed and 34 injured whilst working at cranes or capstans; 1 killed and 43 injured by the falling of waggon-doors, lamps, bales of goods, &c.; 3 killed and 81 injured by falling off, or when getting on or off, stationary engines or vehicles; 6 killed and 114 injured by falling off platforms, ladders, scaffolds, &c.; 2 killed and 121 injured by stumbling whilst walking on the line or platforms; 1 killed and 65 injured whilst attending to stationary engines in sheds; 12 injured by being trampled on or kicked by horses; 4 killed and 190 injured whilst working on the line or in sidings; and 2 killed and 97 injured from various other causes. Of other persons, most of whom were transacting business on the companies' premises, 4 were killed and 35 injured—making a total in this class of accidents of 29 persons killed and 1,255 injured.

Thus the total number of personal accidents reported to the Board of Trade by the several Railway Companies during the three months amounts to 263 persons killed and 2,360 injured.

TABLE No. 1.

GENERAL TOTAL.

NUMBER of PERSONS reported, during the Three Months ending 31st March 1893, as KILLED or INJURED on the RAILWAYS of the UNITED KINGDOM, distinguishing between PASSENGERS, SERVANTS of the COMPANIES or of CONTRACTORS, and OTHER PERSONS; and distinguishing also in the case of the Two former Classes between ACCIDENTS caused by ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c., and ACCIDENTS happening otherwise.

	England and Wales.		Scotland.		Ireland.		United Kingdom.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS:—								
From accidents to trains, rolling-stock, permanent-way, &c. -	–	112	–	9	–	–	–	121
By accidents from other causes, including accidents from their own want of caution or misconduct - - -	21	155	1	14	1	1	23	170
SERVANTS:—								
From accidents to trains, rolling-stock, permanent-way, &c. -	–	14	–	2	–	1	–	17
By accidents from other causes, including accidents from their own want of caution or misconduct - - -	105	647	15	84	1	10	121	741
OTHER PERSONS:—								
Whilst passing over railways at level-crossings - -	7	3	1	1	–	–	8	4
Trespassers - - -	36	26	11	11	2	1	49	38
Suicides - - - -	19	–	6	–	1	–	26	–
Miscellaneous, not included in either of the above - -	5	13	2	1	–	–	7	14
TOTAL - -	193	970	36	122	5	13	234	1,105

N.B.—The Board of Trade state the cause of accident as returned by the Companies, but do not guarantee or otherwise adopt the statement, except in cases where an official inquiry has been held.

TABLE No. 2.

NUMBER of PERSONS reported, during the Three Months ending 31st March 1893, as KILLED or INJURED in the UNITED KINGDOM by the TRAVELLING of TRAINS or the MOVEMENT of VEHICLES used exclusively upon RAILWAYS, distinguishing between PASSENGERS, SERVANTS of RAILWAY COMPANIES, and OTHER PERSONS, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury.

	England and Wales.		Scotland.		Ireland.		United Kingdom.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS:—								
From accidents to trains, &c., *see Table No. 3*	–	112	–	9	–	–	–	121
From falling between trains and platforms	4	6	1	4	1	–	6	10
From falling on to the platform, ballast, &c. when getting into or out of trains	3	104	–	5	–	–	3	109
Whilst crossing the line at stations	8	8	–	–	–	–	8	8
By the closing of carriage doors	–	12	–	–	–	–	–	12
From falling out of carriages during the travelling of trains	2	5	–	1	–	–	2	6
By other accidents	4	20	–	4	–	1	4	25
TOTAL	21	267	1	23	1	1	23	291
SERVANTS:—								
From accidents to trains, &c., *see Table No. 3*	–	14	–	2	–	1	–	17
Whilst coupling or uncoupling vehicles	2	77	–	13	–	3	2	93
By coming in contact, whilst riding on vehicles during shunting, with other vehicles, &c. standing on adjacent lines	3	4	–	2	–	–	3	6
Whilst passing over or standing upon buffers during shunting	–	3	–	4	–	–	–	7
When getting on or off, or falling off, engines, waggons, &c. during shunting	4	48	1	7	–	–	5	55
Whilst braking, spragging, or chocking wheels	–	35	–	6	–	–	–	41
Whilst attending to ground-points, marshalling trains, &c.	–	3	–	2	–	1	–	6
Whilst moving vehicles by capstans, turn-tables, props, &c. during shunting	5	72	2	4	–	–	7	76
By other accidents during shunting operations, not included in the preceding	20	130	1	17	–	1	21	148
From falling off engines, &c. during the travelling of trains	–	5	–	3	–	1	–	9
By coming in contact with over-bridges or erections on the sides of the line during the travelling of trains	–	7	–	1	–	1	–	9
When getting on or off engines, vans, &c. during the travelling of trains	1	21	–	2	–	–	1	23
Whilst attending to, or by the failure of, machinery, &c. of engines in steam	3	120	–	3	–	–	3	123
Whilst working on the permanent-way, sidings, &c.	17	17	–	8	–	1	17	26
Whilst attending to gates at level-crossings	–	2	–	–	–	–	–	2
Whilst walking, crossing, or standing on the line on duty	35	41	6	7	–	–	41	48
From being caught between vehicles	4	7	–	2	–	1	4	10
From falling or being caught between trains and platforms, walls, &c.	3	15	1	2	–	–	4	17
Whilst walking, &c. along the line on the way home or to work	7	3	3	–	1	–	11	3
Miscellaneous	1	37	1	1	–	1	2	39
TOTAL	105	661	15	86	1	11	121	758
OTHER PERSONS:—								
Whilst passing over railways at level-crossings	7	3	1	1	–	–	8	4
Trespassers	36	26	11	11	2	1	49	38
Suicides	19	–	6	–	1	–	26	–
Miscellaneous	5	13	2	1	–	–	7	14
TOTAL	67	42	20	13	3	1	90	56
SUMMARY:—								
Passengers	21	267	1	23	1	1	23	291
Servants	105	661	15	86	1	11	121	758
Other persons	67	42	20	13	3	1	90	56
TOTAL ALL CLASSES	193	970	36	122	5	13	234	1,105

TABLE No. 3.

ENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c. reported, during the Three Months ending 31st March 1893, having occurred on the RAILWAYS in the UNITED KINGDOM, distinguishing the different Classes of Accident, and the number of Passengers and others, and of Servants of Railway Companies, KILLED or INJURED in each Class of Accident.

—	NUMBER OF CASES.				NUMBER OF PASSENGERS AND OTHERS.								NUMBER OF SERVANTS.							
	England and Wales.	Scotland.	Ireland.	United Kingdom.	England and Wales.		Scotland.		Ireland.		United Kingdom.		England and Wales.		Scotland.		Ireland.		United Kingdom.	
					Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
s between passenger or parts of passenger - - -	6	–	–	6	–	11	–	–	–	–	–	11	–	–	–	–	–	–	–	–
s between passenger and goods or mineral engines, and vehicles ng foul of the line -	10	1	1	12	–	43	–	3	–	–	–	46	–	3	–	–	–	–	–	3
s between goods trains s of goods trains -	4	–	–	4	–	–	–	–	–	–	–	–	–	5	–	–	–	–	–	5
ming in contact with ions from other trains ng on parallel lines -	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
trains or parts of ger trains leaving the - - -	6	2	4	12	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–
ins or parts of goods engines, &c. leaving s - - -	2	–	2	4	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1
engines travelling in ng direction through - - -	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
nning into stations ngs at too high a - - -	7	1	–	8	–	53	–	6	–	–	–	59	–	3	–	–	–	–	–	3
nning over cattle or structions on the line	26	11	3	40	–	2	–	–	–	–	–	2	–	–	–	–	–	–	–	–
nning through gates crossings - -	8	–	–	8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
cing of boilers or c. of engines -	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
re of machinery, &c. of engines -	3	–	1	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
of tyres - - -	112	8	1	121	–	2	–	–	–	–	–	2	–	–	–	–	–	–	–	–
wheels - -	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
axles - -	28	15	1	44	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
brake apparatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
couplings -	6	1	–	7	–	–	–	–	–	–	–	–	3	–	2	–	–	–	–	5
ropes used in working inclines	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
tunnels, bridges, iaducts, culverts, &c.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
s - - -	78	16	3	97	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ng of portions of t-way - -	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ttings or embank- - - -	3	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
s - -	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
tions or involving bridges or viaducts	3	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
nts - -	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TOTAL - -					–	112	–	9	–	–	–	121	–	14	–	2	–	1	–	17

TABLE No. 4.

ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c. on the RAILWAYS in the UNITED KINGDOM, reported RAILWAYS on which the same have occurred, and the Number of Passengers and others, and of

NAME OF COMPANY.	Collisions between passenger trains or parts of passenger trains.	Collisions between passenger trains and goods or mineral trains, engines, &c.	Collisions between goods trains or parts of goods trains.	Trains coming in contact with projections from other trains travelling on parallel lines.	Passenger trains or parts of passenger trains leaving the rails.	Goods trains or parts of goods trains, engines, &c. leaving the rails.	Trains or engines travelling in the wrong direction through points.	Trains running into stations or sidings at too high a speed.	Trains running over cattle or other obstructions on the line.	Trains running through gates at level-crossings.	The bursting of boilers or tubes, &c. of engines.	The failure of machinery, springs, &c. of engines.	The failure of tyres.
ENGLAND AND WALES.													
Brecon and Merthyr Junction	–	–	–	–	–	–	–	–	–	–	–	–	–
Cambrian	–	–	–	–	–	–	–	–	–	–	–	–	–
Festiniog	–	–	–	–	–	–	–	–	–	–	–	–	–
Furness	–	–	–	–	–	–	–	–	–	–	–	–	–
Great Eastern	1	–	–	–	–	–	–	1	3	2	–	1	6
Great Northern	–	1	1	–	–	–	–	1	–	–	–	–	2
Great Western	–	–	–	–	–	–	–	–	4	4	–	2	1
Hull, Barnsley, and West Riding Junction.	–	–	–	–	1	–	–	–	–	–	–	–	–
Isle of Wight	–	–	–	–	–	1	–	–	–	–	–	–	–
Lancashire and Yorkshire	2	2	2	–	–	–	–	–	3	–	–	–	1
Liverpool Overhead	–	–	–	–	–	–	–	1	–	–	–	–	–
London and North-Western	–	2	–	–	–	–	–	2	–	–	–	–	5
London and North-Western and Great Western Joint.	–	–	–	–	–	–	–	–	–	–	–	–	–
London and South-Western	1	2	–	–	2	–	–	–	1	2	–	–	2
London, Brighton, and South Coast.	1	1	–	–	–	–	–	1	2	–	–	–	1
London, Chatham, and Dover	–	–	–	–	–	–	–	–	–	–	–	–	–
Manchester, Sheffield, and Lincolnshire.	–	–	1	–	–	–	–	–	1	–	–	–	1
Maryport and Carlisle	–	–	–	–	–	–	–	–	–	–	–	–	–
Metropolitan	–	–	–	–	–	–	–	1	–	–	–	–	–
Midland	–	–	–	–	–	–	–	–	–	–	–	–	4
Neath and Brecon	–	–	–	–	1	1	–	–	1	–	–	–	–
North-Eastern	–	–	–	–	2	–	–	–	11	–	–	–	2
North London	–	–	–	–	–	–	–	–	–	–	–	–	–
North Staffordshire	–	–	–	–	–	–	–	–	–	–	–	–	2
Sheffield and Midland Joint	–	1	–	–	–	–	–	–	–	–	–	–	–
South Eastern	1	1	–	–	–	–	–	–	–	–	–	–	1
West Lancashire	–	–	–	–	–	–	–	–	–	–	–	–	–
Private Owners	–	–	–	–	–	–	–	–	–	–	–	–	84
TOTAL, ENGLAND	6	10	4	–	6	2	–	7	26	8	–	3	112

TABLE No. 4.

uring the Three Months ending 31st March 1893, distinguishing the different CLASSES of ACCIDENTS, the different he Servants of Railway Companies, KILLED or INJURED on each Railway by those Accidents.

The failure of wheels.	The failure of axles.	The failure of brake apparatus.	The failure of couplings.	The failure of ropes used in working inclines.	The failure of tunnels, bridges, viaducts, or culverts.	Broken rails.	The flooding of portions of permanent-way.	Slips in cuttings or embankments.	Fire in trains.	Fire at stations or involving injury to bridges or viaducts.	Other accidents.	Number of Passengers and others.		Number of Servants.		Total all Classes.	
												Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	7	–	–	–	–	–	–	–	–	–	–	–
–	1	–	–	–	–	1	–	–	–	–	–	–	7	–	–	–	7
–	–	–	–	–	–	–	–	–	–	–	–	–	5	–	2	–	7
–	–	–	3	–	–	5	–	2	–	3	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	1	–	–	5	–	–	–	–	–	–	19	–	5	–	24
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	10	–	–	–	–	11	–	–	–	–	–	–	37	–	1	–	38
–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–
–	–	–	2	–	–	13	–	1	–	–	–	–	3	–	2	–	5
–	1	–	–	–	–	6	–	–	–	–	–	–	3	–	–	–	3
–	1	–	–	–	–	7	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	–	1
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	5	–	–	–	–	–	–	31	–	2	–	33
–	4	–	–	–	–	5	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	6	–	–	–	–	7	–	–	–	–	–	–	2	–	–	–	2
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	2
–	–	–	–	–	–	–	–	–	–	–	–	–	4	–	–	–	4
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	28	–	6	–	–	78	–	3	–	3	–	–	112	–	11	–	126

[*Continued on next page.*

TABLE No. 4.—Number of Accidents to Trains

NAME OF COMPANY.	Collisions between passenger trains or parts of passenger trains.	Collisions between passenger trains and goods or mineral trains, engines, &c.	Collisions between goods trains or parts of goods trains.	Trains coming in contact with projections from other trains travelling on parallel lines.	Passenger trains or parts of passenger trains leaving the rails.	Goods trains or parts of goods trains, engines, &c. leaving the rails.	Trains or engines travelling in the wrong direction through points.	Trains running into stations or sidings at too high a speed.	Trains running over cattle or other obstructions on the line.	Trains running through gates at level-crossings.	The bursting of boilers or tubes, &c. of engines.	The failure of machinery, springs, &c. of engines.	The failure of tyres.
SCOTLAND.													
Caledonian	–	–	–	–	–	–	–	–	8	–	–	–	5
Glasgow and South-Western	–	–	–	–	–	–	–	1	–	–	–	–	–
Great North of Scotland	–	–	–	–	–	–	–	–	–	–	–	–	1
Highland	–	–	–	–	–	–	–	–	1	–	–	–	–
North British	–	1	–	–	2	–	–	–	2	–	–	–	1
Private Owners	–	–	–	–	–	–	–	–	–	–	–	–	1
TOTAL, SCOTLAND	–	1	–	–	2	–	–	1	11	–	–	–	8
IRELAND.													
Belfast and Northern Counties	–	1	–	–	–	–	–	–	–	–	–	–	–
Bessbrook and Newry	–	–	–	–	2	2	–	–	–	–	–	–	–
Cavan, Leitrim, and Roscommon.	–	–	–	–	1	–	–	–	–	–	–	–	–
Dublin, Wicklow, and Wexford	–	–	–	–	–	–	–	–	–	–	–	–	–
Great Northern of Ireland	–	–	–	–	–	–	–	–	–	–	–	1	–
Great Southern and Western	–	–	–	–	1	–	–	–	–	–	–	–	–
Midland Great Western	–	–	–	–	–	–	–	–	–	–	–	–	1
Waterford and Central Ireland	–	–	–	–	–	–	–	–	1	–	–	–	–
Waterford and Limerick	–	–	–	–	–	–	–	–	2	–	–	–	–
TOTAL, IRELAND	–	1	–	–	4	2	–	–	3	–	–	1	1
TOTAL, UNITED KINGDOM	**6**	**12**	**4**	**–**	**12**	**4**	**–**	**8**	**40**	**8**	**–**	**4**	**121**

ng-Stock, Permanent-Way, &c.—*continued.*

The failure of axles.	The failure of brake appa-ratus.	The failure of coup-lings.	The failure of ropes used in working inclines.	The failure of tunnels, bridges, viaducts, or culverts.	Broken rails.	The flooding of portions of per-manent-way.	Slips in cuttings or embank-ments.	Fire in trains.	Fire at stations or in-volving injury to bridges or via-ducts.	Other acci-dents.	Number of Passengers and others.		Number of Servants.		Total all Classes.	
											Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.
7	–	–	–	–	8	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	6	–	–	–	6
–	–	1	–	–	–	–	–	–	–	–	–	–	–	2	–	2
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5	–	–	–	1	8	–	–	–	–	–	–	3	–	–	–	3
3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
15	–	1	–	1	16	–	–	–	–	–	–	9	–	2	–	11
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	–	–	–	–	3	–	–	–	–	–	–	–	–	1	–	1
44	–	**7**	–	**1**	**97**	–	**3**	–	**3**	–	–	**121**	–	**17**	–	**138**

TABLE No. 5.

NUMBER of SERVANTS of RAILWAY COMPANIES and CONTRACTORS reported, during the Three Months ending
used exclusively upon RAILWAYS, distinguishing the Number which have occurred on each Railway or Syst

NAME OF COMPANY.	From accidents to trains, &c. *See* Table No. 4.		Whilst coupling or uncoupling vehicles.		By coming in contact whilst riding on vehicles during shunting with other vehicles, &c. standing on adjacent lines.		Whilst passing over, or standing upon, buffers during shunting.		When getting on or off, or falling off, engines, waggons, &c. during shunting.		Whilst braking, spragging, or chocking wheels.		Whilst attending to ground-points, marshalling trains, &c.		Whilst moving vehicles by capstans, turntables, props, &c. during shunting.		By c acci du shu oper not in in prec
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.
ENGLAND AND WALES.																	
Brecon and Merthyr Junction	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Cambrian	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Cheshire Lines	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
Furness	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–
Great Eastern	–	–	–	2	1	1	–	–	–	1	–	1	–	–	1	2	1
Great Northern	–	2	–	4	–	1	–	–	–	2	–	–	–	–	1	3	1
Great Western	–	–	–	9	–	–	–	–	–	8	–	6	–	–	–	6	2
Hull, Barnsley, and West Riding	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–
Lancashire and Yorkshire	–	5	–	13	–	–	–	1	–	4	–	9	–	–	–	17	1
London and North-Western	–	1	–	29	–	–	–	–	1	20	–	9	–	3	1	29	1
London and North-Western and Great Western Joint.	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	1
London and South-Western	–	2	–	1	–	–	–	–	–	2	–	–	–	–	–	1	–
London, Brighton, and South Coast	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
London, Chatham, and Dover	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–
London, Tilbury, and Southend	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Manchester, Sheffield, and Lincolnshire	–	1	–	3	1	–	–	–	–	1	–	1	–	–	–	1	2
Mersey	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Metropolitan	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Midland	–	–	–	1	–	–	–	–	1	4	–	1	–	–	–	1	3
Midland, and Great Western Joint	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–
North-Eastern	–	–	1	13	1	2	–	2	1	3	–	7	–	–	2	10	1
North London	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
North Staffordshire	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Severn and Wye and Severn Bridge	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Sheffield and Midland Joint	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Somerset and Dorset	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
South-Eastern	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Taff Vale	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1
West London Extension	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TOTAL, ENGLAND AND WALES	–	14	2	77	3	4	–	3	4	48	–	35	–	3	5	72	20

TABLE No. 5.

893, as KILLED or INJURED in the UNITED KINGDOM by the TRAVELLING of TRAINS or the MOVEMENT of VEHICLES , and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury.

ff ng el-	By coming in contact with over-bridges or erections on the sides of the line during the travelling of trains.		When getting on or off engines, vans, &c. during the travelling of trains.		Whilst attending to, or by the failure of, machinery, &c. of engines in steam.		Whilst working on the permanent-way, sidings, &c.		Whilst attending to gates at level-crossings.		Whilst walking, crossing, or standing on the line on duty.		From being caught between vehicles.		From falling or being caught between trains and platforms, walls, &c.		Whilst walking, &c. on the line on the way home or to work.		Miscellaneous.		TOTAL.	
n-red.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	2	1
–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	1	2
..	–	–	–	–	–	1	1	–	–	1	5	4	–	–	–	1	–	–	–	–	9	13
–	–	–	–	2	–	2	1	–	–	–	1	6	–	–	–	2	1	–	1	1	6	31
–	–	–	–	4	–	14	2	1	–	–	4	2	1	1	1	3	1	–	–	9	11	71
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
1	–	2	–	1	–	21	1	1	–	–	2	6	–	2	–	1	1	–	–	7	5	110
2	–	1	–	2	1	61	3	4	–	–	5	5	1	2	1	3	1	2	–	13	15	232
–	–	–	–	1	–	–	–	–	–	–	–	2	–	–	–	–	–	1	–	–	2	7
–	–	–	–	2	–	2	2	2	–	–	–	2	–	–	1	2	1	–	–	2	4	26
–	–	1	–	–	–	1	–	2	–	–	2	–	–	–	–	1	–	–	–	1	2	10
–	–	–	–	1	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	1	3
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1
–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	1	–	–	–	6	6
–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	2	–	–	1	–	–	–	–	–	–	–	–	–	1	4
–	–	–	1	2	–	–	1	1	–	–	4	4	2	1	–	–	1	–	–	–	13	22
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
2	–	2	–	1	2	17	1	2	–	1	3	6	–	1	–	1	–	–	–	–	12	90
–	–	–	–	2	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	3	2	7
–	–	–	–	–	–	–	3	–	–	–	1	–	–	–	–	–	–	–	–	–	4	1
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2
–	–	–	–	–	–	–	–	2	–	–	2	1	–	–	–	–	–	–	–	1	4	6
–	–	1	–	1	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	2	5
–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1
5	–	7	1	21	3	120	17	17	–	2	35	41	4	7	3	15	7	3	1	37	105	661

[*Continued on next page*

TABLE No. 5.—Number of Servants repo

NAME OF COMPANY.	From accidents to trains, &c. *See* Table No. 4.		Whilst coupling or uncoupling vehicles.		By coming in contact whilst riding on vehicles during shunting with other vehicles, &c. standing on adjacent lines.		Whilst passing over, or standing upon, buffers during shunting.		When getting on or off, or falling off, engines, waggons, &c. during shunting.		Whilst braking, spragging, or chocking wheels.		Whilst attending to ground-points, marshalling trains, &c.		Whilst moving vehicles by capstans, turntables, props, &c. during shunting.		By oth accide during shunti operati not incl in the preced	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	j
SCOTLAND.																		
Caledonian	–	–	–	9	–	2	–	4	1	5	–	3	–	1	–	1	1	
Glasgow and Paisley Joint	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Glasgow and South-Western	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	
Great North of Scotland	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Highland	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
North British	–	–	–	4	–	–	–	–	–	2	–	2	–	1	2	3	–	
Portpatrick and Girvan Joint	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
TOTAL, SCOTLAND	–	2	–	13	–	2	–	4	1	7	–	6	–	2	2	4	1	1
IRELAND.																		
Belfast and Northern Counties	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Bessbrook and Newry	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Dublin, Wicklow, and Wexford	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Great Northern of Ireland	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Great Southern and Western	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	
Midland Great Western	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	
TOTAL, IRELAND	–	1	–	3	–	–	–	–	–	–	–	–	–	1	–	–	–	
TOTAL, UNITED KINGDOM	–	17	2	93	3	6	–	7	5	55	–	41	–	6	7	76	21	1

lled or Injured, &c.—*continued.*

om ar off ines, uring ravel- g of ins.	By coming in contact with over-bridges or erections on the sides of the line during the travelling of trains.		When getting on or off engines, vans, &c. during the travelling of trains.		Whilst attending to, or by the failure of, machinery, &c. of engines in steam.		Whilst working on the permanent-way, sidings, &c.		Whilst attending to gates at level-crossings.		Whilst walking, crossing, or standing on the line on duty.		From being caught between vehicles.		From falling or being caught between trains and platforms, walls, &c.		Whilst walking, &c. on the line on the way home or to work.		Mis-cellaneous.		Total.	
Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1	–	–	–	1	–	2	–	5	–	–	3	2	–	–	1	–	–	–	–	–	6	45
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	3
–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	1	4
–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	2	–
2	–	1	–	1	–	1	–	3	–	–	1	4	–	–	–	1	2	–	1	1	6	32
–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1
3	–	1	–	2	–	3	–	8	–	–	6	7	–	2	1	2	3	–	1	1	15	86
–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	4
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	3
1	–	1	–	–	–	–	–	1	–	–	–	–	–	1	–	–	1	–	–	1	1	11
9	–	9	1	23	3	123	17	26	–	2	41	48	4	10	4	17	11	3	2	39	121	758

TABLE No. 6.

TABLE showing the different OCCUPATIONS of SERVANTS of RAILWAY COMPANIES and CONTRACTORS who were KILLED and INJURED during the Three Months ending 31st March 1893, and classifying their INJURIES as far as practicable.

CLASS OF SERVICE.	Fatal.	Amputations.			Fractures.		Dislocations.	Crushes.			Scalds, Burns.	Sprains, Cuts, or Bruises.				Unspecified Injury to				Miscellaneous.	Total Injured.
		Legs or Arms.	Feet or Hands.	Toes or Fingers.	Legs or Arms.	Collar-bones or Ribs.		Legs or Arms.	Feet or Hands.	Body.		Severe.		Shaken.	Slight.	Head.	Body.	Legs or Arms.	Feet or Hands.		
Brakesmen and Goods-guards	11	–	3	2	6	5	2	3	18	–	2	54	2	1	4	7	9	20	9	1	148
Capstanmen	1	–	–	–	2	–	–	–	2	2	–	3	–	–	–	1	–	3	5	–	18
Carmen	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	–	4
Carriage-cleaners	1	–	–	–	–	–	–	–	–	–	–	–	1	1	1	–	1	1	1	–	6
Carriage or waggon examiners	5	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	1	–	3
Checkers	–	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	–	1	1	4
Chockers, Chain-boys, and Slippers.	–	1	–	–	–	1	–	–	–	–	–	2	–	–	–	1	2	3	6	1	17
Clerks	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1
Engine-cleaners	2	–	–	–	1	1	–	–	2	3	–	5	–	–	–	–	–	3	1	–	16
Engine-drivers	9	–	1	–	1	2	1	1	2	–	1	19	1	–	2	5	11	19	8	4	78
Firemen	1	–	1	–	2	–	–	1	6	–	10	29	3	–	3	11	7	15	14	3	105
Gatekeepers	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1
Greasers	5	1	1	–	1	–	–	–	–	–	–	2	–	–	–	–	–	–	1	–	6
Guards, Passenger	–	–	–	–	–	–	–	–	1	–	–	2	1	1	3	1	–	1	2	1	13
Horse-drivers	2	–	–	–	–	1	–	–	2	–	–	3	–	–	–	–	–	3	2	–	11
Inspectors	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	2	2	1	–	–	6
Labourers	8	2	–	–	1	2	–	–	1	–	1	8	2	–	3	–	2	1	1	–	24
Lampmen	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Loaders and Sheeters	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	2
Mechanics	6	–	–	–	–	–	–	1	1	–	–	3	1	1	–	1	–	1	2	–	11
Messengers	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Number-takers	–	1	1	–	–	–	–	–	1	–	–	1	–	–	–	1	–	2	–	–	7
Permanent-way Men	43	1	1	1	2	2	–	–	3	1	–	10	–	3	1	4	2	2	1	2	36
Pointsmen	–	–	–	–	1	1	–	–	–	1	–	1	–	–	–	–	1	–	–	–	5
Policemen	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Porters	12	2	–	1	1	2	–	3	16	8	–	30	9	2	1	4	5	12	12	1	109
Shunters	6	1	1	–	1	3	1	2	12	–	–	24	2	–	–	3	7	12	9	1	79
Signal-fitters	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Signalmen	1	–	–	–	–	–	–	–	–	–	–	3	2	–	–	1	2	–	–	–	8
Station-masters	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	1	–	–	3
Ticket-collectors	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	1	–	–	–	–	3
Watchmen	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Yardsmen	–	–	–	–	–	–	–	–	–	–	–	3	–	–	–	–	1	1	–	–	5
Miscellaneous	2	1	–	–	1	–	–	–	2	–	–	5	1	4	1	3	–	6	3	–	27
Contractors' Servants	2	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–		–	1
TOTAL	121	11	10	4	21	22	4	11	69	16	14	210	26	13	19	48	52	110	83	15	758

TABLE No. 7.

NUMBER of PERSONS reported, during the Three Months ending 31st March 1893, as having been KILLED or INJURED whilst upon the Companies' Premises, by Accidents in which the Movement of Vehicles used exclusively upon Railways was not concerned, distinguishing between Passengers, Servants of Companies, and other Persons, and classifying, as far as practicable, the Nature and Causes of the Accidents occasioning the Death or Injury.

	England and Wales.		Scotland.		Ireland.		United Kingdom.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS :—								
Whilst ascending or descending steps at stations	2	36	—	—	—	—	2	36
By being struck by barrows, by falling over packages, &c. on station platforms	—	11	—	—	—	—	—	11
From falling off platforms	—	10	—	—	—	—	—	10
By other accidents	1	15	—	—	—	—	1	15
TOTAL	3	72	—	—	—	—	3	72
SERVANTS :—								
Whilst loading, unloading, or sheeting waggons	2	338	—	4	—	—	2	342
Whilst moving or carrying goods in warehouses, &c.	—	49	—	—	—	—	—	49
Whilst working at cranes or capstans	1	33	—	—	—	1	1	34
By the falling of waggon-doors, lamps, bales of goods, &c.	1	41	—	2	—	—	1	43
From falling off, or when getting on or off, stationary engines or vehicles	3	79	—	2	—	—	3	81
From falling off platforms, ladders, scaffolds, &c.	6	114	—	—	—	—	6	114
By stumbling whilst walking on the line or platforms	2	121	—	—	—	—	2	121
Whilst attending to stationary engines in sheds	1	65	—	—	—	—	1	65
By being trampled on or kicked by horses	—	12	—	—	—	—	—	12
Whilst working on the line or in sidings	3	190	1	—	—	—	4	190
Miscellaneous	1	94	—	2	1	1	2	97
TOTAL	20	1,136	1	10	1	2	22	1,148
PERSONS ON BUSINESS AT STATIONS AND OTHERS	4	34	—	1	—	—	4	35
SUMMARY :—								
Passengers	3	72	—	—	—	—	3	72
Servants	20	1,136	1	10	1	2	22	1,148
Persons on business at stations and others	4	34	—	1	—	—	4	35
TOTAL ALL CLASSES	27	1,242	1	11	1	2	29	1,255

Board of Trade,
20th June 1893.

COURTENAY BOYLE.

REPORTS TO THE BOARD OF TRADE BY INSPECTING OFFICERS OF THE RAILWAY DEPARTMENT UPON CERTAIN ACCIDENTS WHICH HAVE BEEN INQUIRED INTO.

	Page.
DERRY CENTRAL :	
Major-General Hutchinson's report on the collision that occurred on the 30th March, at Garvagh station, between two passenger trains	23
GLASGOW AND SOUTH-WESTERN :	
Major Marindin's report on the collision that occurred on the 4th January at St. Enoch station, between a passenger train and the buffer-stops	27
GREAT EASTERN :	
Major Yorke's report on the collision that occurred on the 17th January at Lowestoft station, between a passenger train and an empty fish truck	30
LANCASHIRE AND YORKSHIRE :	
Major-General Hutchinson's report on the collision that occurred on the 17th March at Windsor Bridge sidings, between a passenger train and a goods waggon	34
LONDON AND NORTH-WESTERN :	
Major Marindin's report on the collision that occurred on the 20th January at Hulton's Sidings near Chequerbent, between a passenger train and a goods brake-van attached to an engine	38
LONDON AND SOUTH-WESTERN :	
Major Marindin's report on the collision that occurred on the 31st January at Richmond station, between a passenger train and an empty carriage train	45
LONDON, BRIGHTON, AND SOUTH-COAST :	
Major-General Hutchinson's report on the accident that occurred on the 20th March between South Croydon and East Croydon stations, to a Pullman car of a passenger train	48
METROPOLITAN :	
Major Marindin's report on the collision that occurred on the 20th January at Baker Street station, between an up passenger train and the platform at the end of the dock	53
NORTH BRITISH :	
Major Marindin's report on the collision that occurred on the 5th January at Possilpark station, between a passenger train and a goods train	56
NORTH-EASTERN :	
Major Marindin's report on the fatal accident that occurred on the 11th January at the Waldridge incline, to a bank-rider named Ralph Mowbray	61
SHEFFIELD AND MIDLAND :	
Major Marindin's report on the collision that occurred on the 3rd March at New Mills between a passenger train and a coal train	68

DERRY CENTRAL RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
12th May, 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 11th ultimo, the result of my enquiry into the circumstances connected with the collision which took place on the 30th March at Garvagh station on the Derry Central Railway, which is worked by the Belfast and Northern Counties Railway Company.

In this case, while the engine and some waggons forming part of the 8.45 a.m. mixed train from Coleraine for Magherafelt, due at Garvagh at 9.44 a.m., were moving into a siding which joins the loop line for trains from Magherafelt for Coleraine, some of the waggons were struck by the engine of the 8.55 a.m. passenger train from Magherafelt for Coleraine, due at Garvagh also at 9.44 a.m., the collision taking place about 37 yards inside the home-signal, at which the driver of the passenger train had failed to stop, though both this signal and the distant-signal were admittedly at danger against his train.

No complaints of injury have been received from any passengers and no servants of the Company were injured.

The passenger train consisted of a 6-wheeled (four wheels coupled in rear) engine and 6-wheeled tender (running engine in front), two carriages and a brake-van fitted throughout, with the exception of the tender, with the automatic vacuum-brake, and in it the corner of the buffer-plank of the engine was damaged; no wheels left the rails.

The portion of the mixed train run into consisted of a 6-wheeled (four wheels coupled in front) engine and 6-wheeled tender running engine in front, and nine loaded waggons. The engine was fitted with a steam-brake applying to the coupled wheels and an automatic vacuum-brake worked by the same handle as the steam-brake and applying to the tender wheels, the tender having also a hand-brake. In it five waggons were damaged, one badly, and four were knocked off the rails.

Description.

Garvagh station is a passing place on the single line between Coleraine and Magherafelt, the single line being worked on the train staff and ticket system accompanied by a species of block telegraph system, the adjacent block stations being, towards Coleraine, Macfin $7\frac{3}{4}$ miles distant, and, towards Magherafelt, Kilrea $5\frac{3}{4}$ miles distant. The block telegraph is used only to prevent two trains going in the same direction from being at the same time between two block telegraph stations, and not for preventing shunting going on at a station so as to foul the line on which another train is expected to arrive, no notice being given to the station in advance of the departure of the train from the station in rear.

Garvagh station is provided with the usual signals, properly interlocked with the points, the levers being worked from a raised cabin on the down or west side of the line about 66 yards north of the loop facing-points next Magherafelt; the down home-signal is about five yards south of these points and the down distant-signal is about 390 yards south of the down home-signal, the former being visible from the distant-signal and the distant-signal for a distance of about 250 yards. The line is level in the station and for a distance of about 200 yards south of the down home-signal, it then rises towards Magherafelt on a gradient of 1 in 130 for a considerable distance.

The collision occurred about 37 yards north of or inside the down home-signal, while the engine and waggons of the mixed train were moving southwards into a siding through points on the down loop line about 65 yards north of the down home-signal.

Evidence.

William Thomas Workman, signalman; $7\frac{1}{2}$ years service; signalman all the time.—I came on duty on March 30th at 8 a.m. to remain till 6.10 p.m. The next block station towards Coleraine is Macfin, $7\frac{3}{4}$ miles off and towards Magherafelt Kilrea $5\frac{3}{4}$ miles distant. I do not book the trains. The train from Coleraine arrived a few minutes late; it stopped at the platform and the shunter then unhooked about nine waggons from the front of the train, and after I had set the loop points, No. 7, the engine took

them up the main line clear of the points. I then reversed the points, and the driver set back through the crossing on to the down line till he was clear of No. 6 points. I then opened No. 6 points for the siding, and the driver at once proceeded to draw the waggons into the siding, and the collision took place after the engine and two waggons were clear of the down loop line. The engine of the 8.55 a.m. train struck the third waggon, the fourth, fifth, and sixth being knocked off the road, but the seventh, eighth, and ninth remaining on the rails. The down home and distant signals were both necessarily at danger. I was afraid that the engine of the 8.55 a.m. train would not stop when it was getting close to the home-signal. On seeing what was likely to happen, I thought of reversing No. 7 points and setting them for the up loop line, but was afraid to do so lest the 8.55 a.m. train should have run into the rear portion of the other train, which was standing on the up loop line with some passenger carriages at the rear of it. I first saw the 8.55 a.m. passenger train outside the distant-signal after it had whistled for the signals. It is customary to commence shunting directly the mixed train arrives.

2. *Thomas Butler*, station master at Garvagh; 20 years' service.—I have been 11½ years in my present position. I was on duty on 30th March when the 8.45 a.m. up train arrived from Coleraine at 9.40 a.m., four minutes before time. I get no advice of when trains leave either Macfin or Kilrea, but on the trains leaving this station I inform the adjacent station on the speaking instrument by the words "Train in" and naming the train. The mixed train had to leave a number of waggons at Garvagh, and it was by my permission that these waggons were allowed to be shunted before the arrival of the train from Magherafelt, due at 9.44 a.m. I am not aware of there being any rule to prohibit shunting on the line for which the staff is not at the station, nor do the block rules prohibit this. It has been the practice to allow shunting to go on so long as the other train is not in sight, and I believe it was not in sight when the shunting commenced. I do not know the exact time at which the collision occurred.

3. *Hugh McLoughlin*, brakesman; 11 years' service, 10 months brakesman.—On 30th March I was brakesman of the 8.45 a.m. mixed train from Coleraine for Magherafelt. On leaving Coleraine there were 17 waggons in front of two passenger carriages and a brake-van, in which latter I rode with the guard. I believe we did no shunting at Macfin, but at Aghadowey we did some, and arrived at Garvagh with about 15 or 16 waggons, of which nine had to be left at Garvagh. On arriving I unhooked these nine waggons and gave the driver a signal to go forward on the main line, at which time I had not seen or heard anything of the other train. My driver had set back on to the down line and was going forward into the siding, when I first heard a signal-whistle from the engine of the other train, which I did not see as I was on the wrong side of the waggons. I heard no alarm whistle from either engine and the collision took me unawares while I was standing behind the signal-box waiting to hook off the engine. I think the third or fourth of the waggons was first struck and knocked two or three yards from the line. We generally get the shunting done before the other train arrives. My waggons were moving at the time of the collision. They were all loaded with goods of various kinds. I came on duty at 6 a.m. to remain till 5.15 p.m.

4. *John Doyle*, driver; 23 years' service, 16 years driver.—I commenced duty on 30th March at 5 a.m. to remain till 7.25 p.m. I am off duty three days in the week including Sunday. The hours on the other four days are the same as they were on the 30th. I am employed during the whole of the time. I was driver of the 8.45 a.m. mixed train from Coleraine for Magherafelt. My engine had six wheels (four wheels coupled in front) and a six-wheeled tender. The engine has a steam brake applying to the coupled wheels, and a hand-brake on the tender. There is also an automatic vacuum brake working with the same handle as the steam-brake, and applying to all the tender wheels. We arrived at Garvagh at 9.41 a.m., three minutes before time, with a train of 18 waggons, two passenger carriages, and a brake-van. Immediately on arrival the brakesman uncoupled nine waggons and signalled me to take them on to the main line before setting back into the yard. When I had got out clear of the points I had neither heard nor seen anything of the other train. No time was lost in setting back on to the down line, and when I had arrived there the brakesman McLoughlin said that I was to go into the siding as the signalman said the passenger train was coming and there would be no time to lift three waggons of cattle for Larne, which I had to take on to Magherafelt. I then at once went forward to the siding, and was about half-way between the points and the crossing when I first saw the passenger train getting close up to the home-signal and coming too fast to stop at it. I then tried to move ahead as quickly as possible, hoping I might get clear, and feeling that as I had not time to stop and get into backward motion, a collision between the other engine and my waggons was preferable to one between the engines. I had got up a speed of at least 10 miles an hour when the other engine struck the centre of the third waggon from the engine and knocked off the rails the four next waggons, leaving two on the rails. I could not say the speed of the other engine, but I think it was at least as fast as mine. The other engine stopped on the rails short of the last two waggons. On seeing that the waggons had been struck I shut off steam and put on the steam-brake. I heard no brake-whistling and did not whistle myself. The front of my train after the nine waggons had been removed was about opposite the starting-signal.

5. *Samuel Hamilton*, driver; 12 years' railway service, eight years driver, four years on the Ballymena and Larne line, and four years on this line.—I commenced work on March 30th at 6 a.m. to remain till 7.45 p.m. These are the hours of work four days in the week, the other three days being unemployed. I am more or less occupied the whole time, except an hour in the morning at Magherafelt. I have been accustomed to drive between Magherafelt and Coleraine for the last nine months, McMeekin having been my fireman the whole time. I was driver of the 8.55 a.m. train from Magherafelt for Coleraine. My engine was No. 16 a six-wheeled engine, four wheels coupled in rear, and a six-wheeled tender, running engine in front, and the train consisted of two composite carriages (six-wheeled) and a four-wheeled van. The engine had a steam-brake applying to the four coupled wheels, the tender a hand-brake only, and the vehicles the vacuum-brake, applied by the same handle as the steam-brake. The brakes were in good order, the vacuum being 16 inches. Permanent-way inspector Ross was travelling on the engine from Magherafelt, which we left about two minutes late. We called at four intermediate stations at which the brake acted properly, leaving Kilrea at 9.32½ a.m., 1½ minutes late. Nothing happened on the way, and I shut off steam about a mile and a quarter from Garvagh, the usual place, the speed being then about 30 miles an hour. I first saw the distant-signal about 100 yards off, and it was at danger. Under these circumstances the rule is to slow and draw inside it, so as to be able to stop at any obstruction I saw the home-signal on passing the distant-signal and took it to be off owing to the steam of the 8.45 a.m. train blowing across the arm. I did not see it again till after the collision, as it is not visible from the driver's side, which is on the left. The fireman and permanent-way inspector Ross were looking out on this side, and I got no indication from them that the signal was at danger till I was about

100 yards from it, when Ross drew my attention to it, and I at the same time saw the other engine coming towards me on the crossing. My speed was about seven miles an hour, and I at once applied the vacuum-brake, reversed the engine and put steam on. I had nearly stopped on coming into collision with the third waggon from the engine, the fourth, fifth, sixth, and seventh being drawn past my engine and pushed off the rails, their speed being about four miles an hour. No wheels in my train left the rails. If the signalman had turned me on to the up road I could have stopped before reaching the front of the standing portion of the mixed train. The waggons were not knocked off the rails more than 2 ft. laterally.

6. *Robert McMeekin*, fireman; four years' service, nine months fireman.—I have been Hamilton's fireman since July last, and was with him on the 30th March, my hours being the same as his. I agree with his evidence as to what took place till we reached the Garvagh distant-signal. I there told him that the home-signal was against us. He nodded his head. I saw no steam hanging about the arm. About 200 yards from the home-signal, the usual place for stopping when the signal is against us, I told the driver to stop, and as he did not apply the vacuum-brake I applied the hand-brake, the speed then being 20 to 25 miles an hour, the driver looking out of his window with his hand on the brake handle. I shouted three or four times to him to stop, and Mr. Ross caught hold of him by the arm when we were 60 or 70 yards from the home-signal; he then applied the brake, but with too much force, as the wheels began to skid and the train, which ought to have stopped about the home-signal, went on and had almost stopped when the collision occurred. Hamilton reversed the engine just after applying the brake, the vacuum being about 17 inches.

7. *Samuel Ross*, inspector of permanent-way between Magherafelt and Macfin.—On the 30th March I travelled on the engine of the 8.55 a.m. passenger train from Magherafelt to Garvagh, and stood in the centre of the foot-plate. The driver, who was perfectly sober, stopped properly at all the stations. I did not see the Garvagh distant-signal, nor did I see the home-signal till the engine was about 50 yards from it; it was at danger. Before this I had not heard the fireman say anything to the driver about the signal. On seeing the signal at danger, I called to the driver "Stop, stop!" and then both he and the fireman used their brakes, the driver also reversing his engine. We had very nearly stopped when we struck the waggons. I cannot say why the driver did not see the home-signal.

8. *William Kennedy*, guard; 17 years' service, guard two years.—I came on duty on March 30th at 6.30 a.m. to remain till 6.30 p.m. I was guard of the 8.55 a.m. train from Magherafelt for Coleraine. The train consisted of two carriages, one composite and third-class and a brake-van. I could apply the vacuum brake from the van, the gauge generally showing 15 inches. We left Magherafelt three minutes late and made up the time in running. None of the four stations were overrun between Magherafelt and Garvagh. I saw the Garvagh distant-signal at danger. It was run past at the usual speed when at danger, in which speed there was nothing to alarm me. I could not see the home-signal from the left side of the van, but I could have done so if I had gone to the other side, but I did not do so. I did not see that a collision was imminent, though I had felt the brakes go on just before. I was not knocked down. No passengers complained of injury. There were about 30 in the train. The collision occurred at 9.44 a.m. It was a fine morning. I could not say whether my van-wheels skidded when the brakes were last applied.

Conclusion.

This collision was immediately due to neglect of duty on the part of the driver, fireman, and guard of the passenger train. As this train approached Garvagh station the driver Hamilton saw the distant-signal at danger, and on passing it saw the home-signal, which he took to be "off," owing, he says, to the steam of an engine blowing across the arm and preventing a proper sight of it. He admits that he never saw it again, though he might have done so by stepping across the foot-plate, but says that when about 100 yards from the signal, inspector Ross drew his attention to it, and he at the same time saw the engine of the mixed train coming towards him, and then on the siding crossing (*i.e.*, about 150 yards off). Hamilton says that his speed at this time was only about seven miles an hour, that he at once applied the vacuum-brake with full force, also reversing and putting on steam the reverse way, and that his engine had almost stopped when it came into collision with the third waggon of those attached to the other engine, which was moving into the siding somewhat rapidly in the contrary direction to that in which he was running; that the fourth, fifth, sixth, and seventh waggons were then drawn past his engine and forced off the rails, no wheels of his engine or train leaving the rails.

Hamilton's grave offence consisted in his not taking proper means to assure himself of the actual position of the home-signal as he approached it; although, after passing the distant-signal he was unable to see it from his own side of the engine for a short distance, he had only to cross the foot-plate to get a view of it. Instead of doing this he depended upon his fireman and the permanent-way inspector Ross who was on the foot-plate, and it was Ross who gave him notice that the signal was at danger when it was too late to stop not only at the signal but at a spot 37 yards inside it.

Fireman McMeekin declares that he told Hamilton that the home-signal was at danger as they were passing the distant-signal (when he observed no steam hanging about the arm), Hamilton nodding his head in reply; that when about 200 yards from the signal, the usual place for stopping with the signal at danger, he again told Hamilton to stop, but that as the latter did not apply the vacuum-brake, he (McMeekin) put on the tender hand-brake, and afterwards shouted to him three or four times to

stop, but that it was not till Ross took hold of him by the arm when they were about 60 or 70 yards from the home-signal that Hamilton applied the vacuum-brake, and then so forcibly as to make the wheels skid, thus impairing the brake action.

Ross, the inspector of permanent-way between Magherafelt and Macfin, who was entitled to be on the engine, and who was standing in the centre of the foot-plate, saw nothing of either distant or home signal, till the engine was about 50 yards from the latter, and then seeing it at danger he called to the driver "Stop, stop!" Before this he had not heard the fireman say anything to the driver about the signal, and it was only upon his saying "Stop, stop!" that either vacuum or tender brake was used.

Kennedy, the guard of the train saw the Garvagh distant-signal at danger, but did not give himself the trouble to cross from one side of his van to the other to get a view of the home-signal, which he never saw; he was taken more or less unawares by the collision, feeling the brakes go on just before it occurred.

Driver Hamilton has been 12 years in railway service, eight years a driver, for the last nine months on the Derry Central Railway. He had come on duty at 6 a.m. to sign off at 7.45 p.m. (a day of $13\frac{1}{2}$ hours, out of which about an hour in the morning is not employed) and had therefore been at work about $3\frac{3}{4}$ hours when the collision occurred. These long hours of duty occur on four days in the week, the other three days being unemployed.

This division of the week into four long days of $13\frac{1}{2}$ hours and three blank days, is stated to be liked by the drivers and to be convenient for arranging their work, but it seems to me to be an improper arrangement, as it is impossible, that towards the end of so long a day, a man having to perform the important duties of driver can retain his powers of observation, &c. unimpaired.

Fireman McMeekin has been four years in the service and nine months a fireman, all the time with Hamilton, his hours of duty being the same.

I regret to say that I am unable to attach much credit to his evidence with regard to calling Hamilton's attention to the home-signal being at danger, as inspector of permanent-way, Ross, must have known what occurred and is positive that no means were taken either by the driver or fireman to stop the train until it was within a very short distance of the home-signal. McMeekin is therefore deserving of grave censure, either for not calling Hamilton's attention to the home-signal, which he was in the best position to see, or if, as he declares, he did do so, for not himself applying the vacuum-brake when he found Hamilton failing to do so.

My own opinion is that both Hamilton and McMeekin saw the home-signal at danger in ample time to stop at it, but that there was no intention of doing this until the shunting train was seen to be in their way.

Guard Kennedy is to be blamed for not having made a point of seeing the home-signal; had he done so and found it at danger he could have applied the vacuum-brake, on noticing that the train was going too fast to stop at the signal. Kennedy has 17 years' service, has been a guard two years and had been on duty about $3\frac{1}{4}$ hours out of a booked time of 12 hours when the collision occurred.

Doyle, the driver of the mixed train, on seeing that the passenger train was coming too fast to stop at the home-signal, while his engine and the nine waggons attached to it were in motion into the siding and crossing the path of the passenger train, acted for the best in quickening his speed so as to avoid a collision between the two engines, this actually occurring between the engine of the passenger train and the third waggon from Doyle's engine.

Doyle's work is arranged on the same plan as Hamilton's, but his hours are rather longer, viz., nearly $14\frac{1}{2}$ hours a day without any cessation of importance for four out of seven days; the remarks therefore as to Hamilton's long hours apply with still greater force in the case of Doyle.

Butler, the station-master at Garvagh, who has held this position for $11\frac{1}{2}$ years, allowed the mixed train to commence shunting on its arrival four minutes before time, and stated that it was the practice to go on with the shunting until the other train came in sight. He informed me that there was no rule prohibiting a train from going out on the single line, for which the staff was not at the station, and that the block telegraph rules did not prohibit this practice. He is therefore to be blamed, on his own showing, for allowing shunting to be continued after the passenger train came in sight.

As signalman Workman was acting under the direction of the station-master in allowing the mixed train to commence shunting when the passenger train was almost due, he can hardly be blamed for doing so. He no doubt might have saved the collision had he, on seeing that the passenger train would not stop at the home-signal, reversed

the points through which it had to pass and turned it on to the line on which the rear portion of the mixed train was standing, as this would have given Hamilton about 35 yards more distance in which to stop, which additional distance would probably have been more than sufficient for the purpose. Workman says that it passed through his mind to reverse the points, but he was afraid to do so as there were passenger carriages at the rear of the mixed train, and he thought it better not to run the risk of causing a collision between two trains containing passengers; this was doubtless a wise discretion to exercise. Workman has been a signalman $7\frac{1}{2}$ years, and had at the time of the collision been on duty about $1\frac{3}{4}$ hours out of a day's work of about ten hours.

Having now considered the action of the various servants of the company concerned in this collision, I would remark in conclusion, (1) that the block telegraph rules in force on the Derry Central Railway greatly require amendment; they now provide only for "Train in" being forwarded to the station in rear when a train has arrived at or left the station from which the message is forwarded, thus affording no information as to when the train left the station in rear—information of the utmost importance to the other station. This omission being supplied rules should be laid down forbidding shunting so as to foul the line on which a train is signalled. (2) That the rules for train staff working are broken if shunting is permitted on the single line outside the starting-signal at a staff station when the train staff is not at the station; this should be clearly laid down in the train staff regulations.

Had such rules as I have indicated been in force and been acted up to at Garvagh this collision would not have occurred, and the attention of the Company should be drawn to the necessity of the adoption of some such rules.

It should also be remarked that the tender of the passenger train was not supplied with a continuous-brake; the whole weight of the train was about 76 tons, of which about 54 tons were carried on braked wheels, the tender weighing about 14 tons. It is very probable that, had the tender-wheels been fitted with the continuous-brake, the passenger train might have been stopped before the collision. Although the allowed proportion of braked to unbraked vehicles was not exceeded, it was never intended that engines or tenders should not be fitted with continuous-brake appliances.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

(Signed) C. S. Hutchinson,
Major-General, R.E.

Printed copies of the above Report were sent to the Company on the 14th June.

GLASGOW AND SOUTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
20th January 1893.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 9th instant, the result of my enquiry into the causes of a collision which occurred on the 4th instant, at St. Enoch station, on the Glasgow and South-Western Railway.

In this case, a special passenger train, (consisting of engine and tender, and 17 passenger vehicles fitted throughout with the automatic vacuum-brake), which left Carlisle at 3.25 a.m., when entering St. Enoch station on No. 1 line, at 7.5 a.m., overran the proper stopping place, and came slightly into collision with the buffer-stops.

Five passengers complained of injury, but it is stated that no one was seriously injured.

There was no damage to the rolling stock, beyond the breaking of some lamps, but the buffer-beam of the stops was slightly cracked.

Description.

For a description of this station, see report, dated December 15th, 1892, on a buffer-stop collision, which occurred on the same platform line, on the 30th November 1892.

Evidence.

Peter Murray states: I have been in the service for 22 years, and a driver for 17 years. I act as spare driver every third week, and while in that capacity act as passenger driver if required. I am well acquainted with St. Enoch station. On 4th January I was driver of the 3.10 a.m. excursion train from Carlisle to Glasgow. I had gone off duty at 3.50 a.m. on the 2nd instant and commenced duty at 1.10 a.m. on the 4th for a shift of 13 hours. I left Carlisle at 3.27 a.m., 17 minutes late, the train consisting of engine No. 153, (leading bogie, and driving and trailing wheels coupled) six-wheeled tender and 17 vehicles. The train was fitted throughout with the automatic vacuum-brake acting on the driving and trailing wheels of the engine, all the wheels of the tender, and on four wheels of each vehicle. The brake was in good order, and was used in stopping the train when required on the journey. The last stopping place before reaching St. Enoch was at Shields for collection of tickets, and we left that station at 6.59 a.m., 23 minutes late. I got a clear road thence to St. Enoch, the signals at the latter place being off when sighted for the train to run into No. 1 platform. Steam was shut off when approaching Main Street station, the rate of speed at the time being about ten miles an hour. I first applied the continuous-brake about half-way between Gorbals and Clyde junctions, reducing the speed to about four miles an hour, and then the brake was released. When passing Clyde junction-cabin I applied steam for a short distance, shutting it off before passing the home-signal for St. Enoch. When approaching the end of No. 1 platform I applied the continuous-brake, and released it when about half-way between that point and the station roof to avoid a complete stoppage. The train was then allowed to run slowly into the station, and the continuous-brake was applied for the last time immediately after the engine entered under the station roof, and was not released till after the collision. When about half-way between the entrance to the station and the buffer-stop, I observed that the speed was not being reduced as I expected, and I opened the sand-valves, reversed the engine and applied back steam, but failed to stop before striking the buffers at a speed which I estimate at one mile an hour. On examining the rails after the collision I found that the dry sand had not reached the rails when the valves were opened, owing to the mouth of the sand-pipes being blocked with snow. I remained on the engine, and the shock was very slight. No part of the train left the rails, and neither engine nor carriages sustained any damage. When the train left Shields the brake-gauge registered about 16 inches of vacuum, and this was maintained to St. Enoch, except when the several applications of the brake were made between these points. The rails under the station roof were wet and greasy. The train arrived at St. Enoch at 7.5 a.m. I cannot be sure if the hand-brake on the tender was applied. My brake was in very good order. I did not shut off my small ejector at all. I reckon my speed when entering the station roof was only two miles an hour. I took back the 10.25 a.m. train to Carlisle as pilot, arriving at 12.55 p.m. I had from 145 lbs. to 130 lbs. pressure of steam. I applied the brake several times, releasing it each time by opening the large ejector, keeping up the vacuum.

John Geddes states: I have been about 17 years in the service, and about seven years fireman. I have been firing regularly for Murray for some time, and was fireman to him on the 3.10 a.m. excursion train on the 4th instant. I commenced duty on that date about 1.10 a.m. for the same shift as Murray, having gone off duty about 3.45 a.m. on the 2nd. On the journey the continuous-brake was used at all stopping places, and it was in good working order. Shields station was the last stopping place before reaching St. Enoch. The driver shut off steam when approaching Main Street station; the speed at that time was about ten miles an hour. The signals were all off for St. Enoch station. When approaching Clyde junction-cabin the driver applied the continuous-brake, reducing the speed to about three miles an hour. After releasing the brake the driver applied steam to the engine for a short distance and then shut it off. The last time the continuous-brake was applied was just after the engine entered under the station-roof, and it was not released till after the collision. When four or five engine lengths from the stop-buffers the driver opened the sand-valves, reversed, and applied the steam, but failed to stop the train, which struck the buffers at a speed of about two miles an hour. I remained on the engine and was not thrown down or injured. The stroke did not shift any of the coals or tools on the tender. I applied the hand-brake on the tender when passing Clyde junction-cabin, and it was not released till after the collision. I did not observe the vacuum registered on the brake gauge when approaching St. Enoch station, or before the collision occurred. The speed when entering the station-roof was about three miles an hour. The speed was never more than four miles an hour between Clyde junction and the buffer-stops.

William Robinson states: I have been in the service 15 years, all the time a guard, and for the last six years a passenger guard. On the 4th instant I came on duty at 2.45 a.m. to work the 3.10 a.m. excursion train from Carlisle to Glasgow, due to arrive at the latter place at 6.40 a.m. I was booked off duty from that time till 7.50 p.m., when I worked another excursion train from Glasgow to Carlisle, due to arrive at the latter place at 11.15 p.m. I had left off duty at 6 p.m. on the night of the 3rd after a spell of six hours duty. The 3.10 a.m. excursion train from Carlisle consisted of engine and tender and 17 vehicles in the following order:—Midland thirds 1087 and 849, Glasgow and South-Western first 155, Glasgow and South-Western thirds 230, 134, and 420, Glasgow and South-Western brake-van 9, Glasgow and South-Western third 448, Glasgow and South-Western composite 39, Glasgow and South-Western thirds 423, 409, 131, 113, and 433, Glasgow and South-Western saloon 112, Midland saloon 1323, and Midland brake-van 484. The engine and train were fitted throughout with the automatic vacuum-brake, which was used at all the stopping places on the journey, and was in good order. The train left Carlisle at 3.25 a.m., 15 minutes late, caused by the late arrival of Midland train. Shields was the last stopping place before reaching St. Enoch. We arrived there at 6.50 and left at 6.58 a.m., 22 minutes late. The train was well filled with passengers. We got a clear road from Shields to St. Enoch, all the signals being turned off. I cannot say where the driver shut off steam, the curve on the line, and the adjoining houses, together with the length of the train, preventing me from seeing the engine until the rear van in which I was riding was near to Gorbals junction. At this place I observed that steam was shut off, and at that time I think the rate of speed was about 15 miles an hour. When the engine was near the Clyde junction the continuous-brake was applied, and speed was reduced to about five miles an hour. The speed was afterwards increased as if the driver had applied steam, but I did not see him do so. The continuous-brake was applied a second time when the rear van was near St. Enoch signal-box, and at that time the speed of the train was still about five miles an hour. The continuous-brake was not released after this application, and speed was gradually reduced until the train came to a stand in the usual way. I applied my hand-brake when near to Clyde Bridge, and it

was not taken off until the train stopped. After the train stopped I went along the platform, and when about half-way to the engine met foreman Newbury, who informed me that the engine had struck the stop-buffers, and until then I was not aware that anything unusual had happened. After assisting a passenger to alight who had some luggage in the carriage, I proceeded to the front of the train, and no one complained to me, nor did I see any person who had sustained injury. On examining the carriage in front I found that all the roof lamps in the fourth carriage from the engine had been broken by the shock of the collision. This carriage was fitted with gas lamps, but not being supplied with gas, oil lamps had been placed inside the gas globes which they did not fit properly, and were therefore easily broken. In the carriage next the engine one lamp globe was broken, but I cannot say whether it was a gas or oil lamp. The train had been supplied with roof lamps on the Midland system. There was no damage to any part of the train. I observed that the buffers of the seven carriages next to the engine were pressed in to a considerable extent, the buffers of the other 10 vehicles being extended in the usual way. When the train left Shields the brake-gauge showed 17 inches of vacuum, and when the application of the brake was made at Clyde junction and again released, it showed 17 inches. The next time I looked at the gauge was when the van was about the end of the platform, and the vacuum was destroyed, showing that the brake had been applied full power. There was no rebound. It was snowing slightly at the time. The rails were very greasy and bad for stopping upon inside the station roof.

George Kennedy states: I have been nine years in the service, all the time a goods guard, and about six years a guard in charge. The goods train on which I was in charge being suspended during the holidays. I was instructed to assist the 3.10 a.m. excursion train from Carlisle to Glasgow on the 4th instant, and to return as a passenger to Carlisle by the 10 a.m. train ex Glasgow. On the 4th I commenced duty at 2.50 a.m. My previous spell of duty ended at 3 a.m. on Tuesday the 3rd instant. The excursion train left Carlisle at 3.27 a.m., 17 minutes late, caused by late arrival of a Midland train and checking of tickets. The train consisted of engine and tender and 17 vehicles fitted throughout with the automatic vacuum-brake. I was riding in a brake compartment in the sixth carriage from the engine. I did not keep the time of the running of the train. After the train left Shields station, I did not observe where the driver shut off the steam. The signals worked from St. Enoch station were all turned off, and the speed of the train when passing the distant-signal was about 10 miles an hour. The continuous-brake was slightly applied by the driver when passing along Clyde Bridge, was released, and again applied when passing St. Enoch home-signal, and on reaching the signal-bridge where the brake was released, the train was almost stopped. From this point the speed was increased, and I am of opinion that the driver applied steam to the engine, but I am not certain. From the time the continuous-brake was released at the signal-bridge till the engine struck the stop-buffers I have no recollection of hearing or being aware that the continuous-brake was again applied, When the train left Shields, the brake gauge in my compartment showed 15 inches of vacuum, but I do not remember having looked at it afterwards. When the collision took place the speed of the train did not exceed two miles an hour. My hand-brake was slightly applied when approaching St. Enoch distant-signal, and it was fully applied when passing St. Enoch signal-box, and remained on till the train stopped. The collision took me by surprise, the effects of it being very slightly felt in my compartment. The buffer spindles of the four carriages next to the engine were pressed into the sockets at both ends, the other buffers in rear were in their usual position. In the third carriage from the engine, all the roof lamps were broken, and a lady passenger in that carriage complained to me of her head being slightly injured by a piece of falling glass. The passengers in rear were not aware that the engine had struck the buffers.

A. Muir, signalman in charge of St. Enoch station-cabin, states: This excursion train was warned from Clyde junction at 6.59, accepted at same time, and passed the signal-box at 7.2 a.m. When the train was accepted all the fixed signals were pulled off for it to run into No. 1 platform line, which was empty. The train passed the signal cabin with steam shut off at a speed of not more than six miles an hour. I did not observe whether steam was applied to the engine after it passed the cabin. I have been over nine years a signalman. I came on duty at 6 a.m. for eight hours. The speed of the train was less than usual.

John Douglas, assistant station-master, states: I was near to St. Enoch signal-box when this train passed into the station with steam shut off, and running at a speed of about six miles an hour. The driver applied the steam after entering the platform about 50 yards. I am quite certain of this.

Conclusion.

This was a very slight collision, so slight, indeed, that the buffers on the seven leading carriages only closed up, and probably no one would have been injured if it had not been for the breaking of some badly fitting roof-lamps in the fourth carriage from the engine.

I attribute the collision to a miscalculation of the speed of his train by driver Peter Murray, who had at the time been on duty for about six hours, and who, apparently, did not make sufficient allowance for the greasy state of the rails, and, depending upon his continuous-brake to make the final stop, delayed too long in applying it for that purpose. The guard's brakes and the tender brake were already on, and yet even with the application of the continuous-brake for a distance of more that 100 yards, the train was not stopped at the proper place. It cannot therefore be said that the train was entering the station at such a speed that it could be stopped by the use of the hand-brakes only, and, probably, when the driver, who had his train properly under control at the time, applied steam at the entrance of the station, he increased the speed of his train more than he intended to.

I can only reiterate the remarks I made in the case of a buffer-stop collision which occurred, under precisely similar circumstances, on the same platform line at St. Enoch station, only five weeks previously, and I hope that another collision of the kind will

not be needed to cause the Glasgow and South-Western Railway Company to follow the example of some other companies, and to adopt the wise course of forbidding the use of the continuous-brake for stopping trains inside terminal stations, except in the case of emergency.

In this case if the driver had let his train run quietly in, instead of applying steam, which he would probably not have done if he had had only the hand-brakes to rely upon, the collision would almost certainly not have occurred.

I have, &c.,

The Assistant Secretary, F. A. Marindin,
Railway Department, Board of Trade. *Major, R.E.*

Printed copies of the above Report were sent to the Company on the 3rd February.

GREAT EASTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
3rd February 1893.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 20th January, the result of my enquiry into the collision that occurred on the 17th idem at Lowestoft station on the Great Eastern Railway.

On this occasion, the 9.50 am. train from Beccles, when entering Lowestoft station, failed to stop at the usual place, and came into collision with an empty fish-truck, which was standing close to the buffer-stops at the end of the down platform.

Five passengers are reported to have complained of slight injuries.

The train consisted of six-wheeled passenger engine No. 31, (having four wheels coupled,) four-wheeled tender, and four vehicles in the following order, viz. :—an empty fish-truck, a brake-van, a third-class carriage, and a first-class carriage. The fish-truck and van had four wheels each, while the other two carriages were six-wheeled. The train was fitted throughout with the Westinghouse continuous-brake, working-blocks on the four coupled wheels of the engine, on all the wheels of the tender, and on the leading and trailing-wheels of each of the vehicles in the train. There was also a hand-brake on the tender and in the van.

The empty fish-truck was standing close to the buffer-stops at the end of the down line, it being customary to keep a truck in this position, ready to meet the requirements of the fish-traffic.

No damage whatever was done to the engine, rolling-stock, buffer-stops, or permanent-way.

Description.

Lowestoft is approached from Beccles and Norwich by two single lines, which run side by side for a short distance until they reach Coke Ovens junction, at which point single-line working ends, there being a double line from thence into Lowestoft station. The distance from Coke Ovens junction signal-cabin to the buffer-stops at the end of the down line is 926 yards, and there is one intermediate signal-cabin, known as the yard-box, 560 yards from the stops. The platform is 185 yards long, and the line is level from Coke Ovens junction up to a point 113 yards from the stops, when it rises at a gradient of 1 in 574 to the end. The station is roofed over for a distance of about 40 yards from the stops, and trains usually stop just outside the roof.

The weights on the wheels of the engine No. 31, and tender when fully loaded, are as follows, viz. :—

		Tons.	Cwt.	Qrs.
Engine	Leading	9	18	2
	Driving	10	9	3
	Trailing	10	1	2
Tender	Leading	9	11	2
	Trailing	9	4	3
	Total	49	6	0

Of this total, a weight of 39 tons 7 cwt. 2 qrs. is braked by the Westinghouse brake, and a weight of 18 tons 16 cwts. 1 qr. by the hand-brake.

Evidence.

James Neave, driver, states: I have been 28 years in the Great Eastern Railway Company's service, and 15 years driver. On the 17th January I came on duty at 6.20 a.m. at Beccles, having come off duty at 1.46 p.m. the previous day. I was driving No. 31 tender passenger engine, with four wheels coupled and a four-wheeled tender. The engine was fitted with the Westinghouse brake, working blocks on four wheels of the engine and the four wheels of the tender, and with a hand-brake on the tender. I left Beccles at 9.50 a.m. with a train consisting of two carriages, brake-van, and truck, which were all fitted with the Westinghouse brake. The brake was tested before we started, and it was working all right, and the connections were properly made between the train and engine. We stopped at Carlton Colville station, and reduced speed at Barnby, Carlton Colville swing-bridge, and Coke Ovens junction, and on each occasion the Westinghouse brake worked satisfactorily. On approaching Lowestoft I reduced speed to walking pace at Coke Ovens junction in order to give up the staff. The signals were all off for me from the time I first sighted them. After giving up the staff I gave the engine steam, and shut off steam again as I passed under the footbridge just before reaching the yard signal-box, which would be about 560 yards from the stops. This is the usual place for shutting-off steam unless the weather is very dry. I was then going about 9 or 10 miles an hour. The station signals were all off, and after shutting off steam I put on the Westinghouse brake just before I got to the yard box, and at the same time my mate applied his hand-brake. When I entered the station I was travelling at walking pace, or about four miles an hour, the Westinghouse brake was then on. When I got about halfway down the platform I released my Westinghouse brake, but the hand-brake was kept on. After travelling about 50 or 60 yards I found the hand-brake had not complete control of the train and I re-applied my Westinghouse as I entered the covered-in portion of the station. The engine-wheels picked up, and the application of the continuous-brake had not the effect I expected. It was rather dark in the arcade, and I did not see the fish-truck till I was close on it. The usual stopping-place is just about the entrance to the covered-in portion, that is 33 yards from the stops. I meant to stop at the usual place, and I had no idea I had not control of the train until I was two coach-lengths from the truck. I have been in and out of this station as driver and fireman for 24 years, and I have never touched the stops before. I was not driving my own engine as I had taken duty for a Beccles driver who was away ill. My own engine is a tank-engine with four wheels coupled and bogie under the foot-plate, and it is fitted with Westinghouse brake and hand-brake on four wheels. Its weight is about 45 tons fully loaded. The rails outside the covered-in portion of the station were damp, as there was snow on the ground. I had about 75 lbs. pressure when I applied the brake on both occasions. I had worked a train to Tivetshall with the same engine that morning before coming to Lowestoft. I did not use sand, but the sand pipes were choked with snow. I got down that morning to clear them two or three times. I was running engine first. I know the rule as to entering terminal stations and it is to the effect, as I understand it, that drivers should always enter such stations at hand-brake speed. I reversed my engine just as I reached the fish-truck, and gave her steam.

F. Weeks, fireman, states: I have been in the Company's service five years, and about 18 months fireman. My hours of duty were on the 17th January the same as my driver. I do not know at what place my driver applied his Westinghouse brake, or where he released it or where he re-applied it, as I was busy with my hand-brake. But I corroborate the rest of his evidence. Sometimes a fish truck stands against the stops and sometimes not.

Guard *R. Daplyn* states: I have been with the company 21 years, and four years guard. On the 17th January I came on duty at 6 a.m. at Lowestoft, having come off duty at 7.10 p.m. the previous night. I left Beccles with 9.50 a.m. train for Lowestoft. The train consisted of one first, one third, one van, and an empty fish-truck fitted with Westinghouse brake throughout, working blocks on 16 out of 20 wheels, exclusive of the engine and tender. The brake was tested before starting, and was working all right, and it worked all right on the journey. On approaching Coke Ovens junction speed was reduced to walking pace. The driver put on steam again and he shut it off near the yard signal-box. We would then be going about six or seven miles an hour. I put on my hand-brake on passing the yard signal-box, and I felt the driver apply his Westinghouse brake as I passed the locking-frame at the end of the ramps leading on to the platform. We were then going about five or six miles an hour. I released my hand-brake about half-way down the platform, after the speed had been reduced to three or four miles an hour. I thought the driver had his train under complete control and I had no idea that this was not the case until we struck the fish-truck. The passengers complained to me after the collision. I felt the driver release his Westinghouse brake after I had released my hand-brake, but I did not notice whether he re-applied it or not. There was a rebound of about half my van's length, the van being about 23 feet long, but I did not look to see if the Westinghouse was on after we stopped. The rails were very greasy that morning. No damage whatever was done to my train and it went on with its work in the usual way. I felt the wheels of the van skidding as we passed the end of the platform. I cannot say whether the driver applied his brake partially on passing the yard-box, but the first time I noticed it was at the locking-frame at the end of the platform.

Mr. Smith, station-master states: I was outside the Arcade on my way to the goods office at 10.11 a.m. on the 17th January, and I saw the train in question coming in. It seemed to be approaching at about the usual speed, or about five or six miles an hour. I cannot say whether the Westinghouse brake was on or not, but the wheels of the two last vehicles were going round. Everything seemed to be as usual and I did not watch the train. I did not hear any more of the collision and I was not told of it till I returned from the goods shed. Only two passengers have complained to me. The train went on with its work as usual.

Inspector *Hayhoe* states: I have been in the Company's service 12 years, and 18 months station-inspector at Lowestoft. On the morning of the 17th instant I was near the centre of the down platform when the 9.50 a.m. train from Beccles entered the station. The train passed me at about four miles an hour which is about the usual speed, and I expected to see it stop as usual with the engine opposite the inspector's office. I cannot say whether the Westinghouse brake was on or not, as I saw nothing to cause me to watch the train. I did not see the collision, as I was about to open one of the carriage doors at that moment, but I saw the rebound and it was about half a carriage length. The rails were greasy, as there had been a sharp frost during the night, followed by a thaw in the morning.

Conclusion.

It would appear, from the evidence, that the circumstances under which this slight collision occurred, are as follows:—

The 9.50 a.m. train from Beccles to Lowestoft, was running to time, and the signals were all "off" for it, when it approached the latter place. According to the usual practice, the train was brought nearly to a standstill opposite the Coke Ovens junction signal-cabin, which is 926 yards from the buffer-stops at the end of the line, in order to give up the train staff, the line which is single from Beccles to Coke Ovens junction, being double from the latter point, up to Lowestoft. After giving up the staff the driver put on steam for a short distance, and according to his statement he finally shut off steam on reaching the foot-bridge which is about 800 yards from the stops, at which time the train was travelling at a speed of 9 or 10 miles an hour. Just before reaching the yard signal-cabin, which is 560 yards from the stops, he says he applied his Westinghouse brake, his fireman about the same time putting on the hand-brake, and on entering the station the train was travelling at a speed of about four miles an hour, the Westinghouse brake being still on. When about half-way down the platform, the length of which is 185 yards, he released his Westinghouse brake, thinking that the train was under control, and that the tender hand-brake would be sufficient to stop it. Finding, however, that the hand-brake failed to stop the train at the usual place, which is 40 yards from the stops, he re-applied his Westinghouse brake, but owing to the skidding of the wheels, the brake had not the anticipated effect, and the result was that the train slid forward and struck an empty fish-truck, which was standing against the buffer-stops. The collision was evidently a trifling one, as no damage whatever was done to the rolling-stock or stops, and no claims for compensation had at the time of my enquiry (January 27th) been made against the company, although a few passengers lodged complaints at the time of the occurrence.

The driver's statement as to the spot where he first applied his continuous-brake is not corroborated by the guard, who states that the first application of the brake noticed by him, occurred as the train reached the end of the platform, that is to say, at a point 185 yards from the stops, instead of 560 yards as stated by the driver. And it is to be noted, that the fireman while not contradicting the driver's statement in this particular, does not corroborate it, for he professes himself to be quite unable to state even approximately, the point where the Westinghouse brake was applied. Judging from all the circumstances of the case, I think the guard's statement in this matter is more likely to be correct that the driver's. But without further discussing this matter, the evidence of the stationmaster, Mr. Smith, of Inspector Hayhoe, and of guard Daplyn, makes it clear that the train ran into the station at the usual speed, which is variously estimated at from four to six miles an hour, and so confident was the driver of having his train completely under control that he released his continuous-brake, when half-way down the platform, thinking that the hand-brake would be sufficient to bring the train to rest. Unfortunately the guard about the same time released his hand-brake, so that all the wheels in the train were free, except the four wheels of the tender, which were braked by the hand-brake on the foot-plate. The driver, finding that the train did not stop at the usual place, says that he re-applied his continuous-brake, probably with full force, and the rails being very greasy, the wheels of the train skidded and the collision ensued.

In a buffer-stop collision such as this, in which the engine and train are fitted with the continuous-brake and in which the gradient is favourable, the responsibility must rest with the driver. It is very usual to have wet or greasy rails pleaded as an excuse, but, as I have said on previous occasions, though wet rails may account for a mishap of this nature, they can hardly be said to excuse it. In a climate such as ours a wet rail must be almost as common as a dry one, and a driver of experience should know how to meet the different conditions in accordance with Rule 293, which says: "In stopping his train he (the driver) must pay particular attention to the "state of the weather and the condition of the rails, as well as to the length of the "train; and these circumstances must have due weight in determining when to "shut off steam." In the case under consideration there is a concurrence of testimony that the train entered the station at the same speed as usual, and that the rails were very greasy, owing to frost and snow. This seems to indicate that driver Neave did not make sufficient allowance for the condition of the rails, as had he done so, the train should have entered the station somewhat slower than usual. Omitting for the moment any reference to the rule as to the use of continuous-brakes on entering

terminal stations, driver Neave made a further mistake in releasing his Westinghouse brake when half way down the platform, and in trusting, at the last moment, to the hand-brake to stop the train. It seems more than probable that had he not done this, the collision would not have occurred. But it is fair to remark that Neave was not driving his own engine, as he had taken duty for another man who was sick. Neave's usual engine is a four wheels coupled tank-engine, with a trailing bogie, weighing 45 tons, and both the Westinghouse and hand brakes apply blocks to the four coupled wheels, which carry a weight of 29 tons out of a total of 45. The tender-engine which was being driven by Neave on the occasion under consideration had a total weight (including tender) of 49 tons 6 cwt, of which 39 tons 7 cwt. were braked by the Westinghouse brake, but only 18 tons 16 cwt. by the hand-brake. The hand-brake in the case of the tender-engine is therefore much less powerful than in the other, and it is possible that driver Neave overlooked this fact, or forgot for the moment that he was not on his own engine.

It is also unfortunate that guard Daplyn released his hand-brake about the same time that the driver released the Westinghouse-brake, as this may have contributed to upset the driver's calculations as to the amount of control he possessed over the train.

I therefore am of opinion that this slight collision was due to errors of judgment on the part of driver Neave in not making sufficient allowance for the wet and greasy condition of the rails when he entered the station, and in releasing his continuous brake when halfway down the platform, before he had got his train thoroughly under control. But as to the latter mistake, he may perhaps have been misled by the difference in power between the hand-brake of the tender-engine he was then driving, and that of the tank-engine he generally has charge of, and also by the fact that the guard released his hand-brake before the train had stopped.

Driver Neave had been on duty for 3 hours 50 minutes at the time of the mishap.

Guard Daplyn unwittingly contributed to the collision by releasing his hand-brake under the impression that the driver had his train fully under control. I do not attribute any blame to the guard, as there is no rule in force on the Great Eastern Railway against such action on his part. I believe some companies have a regulation to the effect that a guard should not release his hand-brake after having once applied it, on entering a terminal station, until the train has come to a stand, and this appears to be a useful precaution and one that might with advantage be more generally adopted.

The rule as to the use of the continuous and hand brakes on entering terminal stations has been so often quoted, and the question of modifying the rule has been so often raised by the inspecting officers of the Board of Trade, that it seems hardly necessary to go over the same ground again in this report. Driver Neave acknowledges that he was using his Westinghouse brake when he entered the station, his interpretation of the rule referred to being that drivers should enter terminal stations at hand-brake speed, and not that the hand-brake alone is to be relied upon, except in cases of emergency, for stopping trains in such stations. Although I do not agree, as I have stated on other occasions, with this interpretation of the rule, the Great Eastern Railway Company attaches the same meaning to the rule as the driver, and the latter, therefore, was justified in using his continuous-brake when entering the station at Lowestoft, and it is possible also that he thought he was not exceeding "hand-brake" speed, though the result proved that he was wrong. But "hand-brake" speed is a variable term, depending among other conditions upon the power of the hand-brake, which as explained in this report, differs considerably in different kinds of engines. It therefore would seem desirable, in order to ensure that a train should enter a terminal station at a speed suitable to the particular hand-brake available, that drivers should be instructed to use their hand-brakes when entering such stations, and to reserve the continuous brakes to meet unforeseen emergencies.

I have, &c.,

H. A. YORKE,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

Printed copies of the above Report were sent to the Company on the 16th February.

LANCASHIRE AND YORKSHIRE RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
28th April 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 24th ultimo, the result of my enquiry into the circumstances connected with the collision which occurred on the 17th ultimo at Windsor Bridge sidings cabin near Salford, on the Lancashire and Yorkshire Railway.

In this case while the waggons and van, which formed the 4 p.m. coal train from Kersley to Windsor Bridge sidings, were standing on the up local line with the van about 275 yards inside the up home local line signal, they were run into at 6.28 p.m. by the 5.43 p.m. up passenger train from Wigan for Manchester, which had last stopped at Pendleton, about three-quarters of a mile from the point of collision.

Fourteen passengers have complained of being injured, and the guard of the passenger train was injured.

The passenger train consisted of a six wheels coupled goods engine and six-wheeled tender, running tender in front, third-class carriage, brake-van, two composite and two third-class carriages, six vehicles coupled in the order given, the automatic vacuum-brake being fitted to the six tender wheels, and to twelve-seventeenths of the wheels of the vehicles, all the latter, except the brake-van, having six wheels; there was no brake of any description applying to the engine wheels. The weight of the train was about 122 tons, and of this weight about 72 tons were on braked wheels.

The trailing wheels of the second vehicle, a brake-van, were knocked off the rails.

The only damage sustained was by the tender, in which three axle-boxes, the vacuum-brake cylinder, and left buffer-ram were broken and the foot-plating damaged.

The coal train consisted of 24 loaded coal-waggons, and a brake-van, and in it the three rear vehicles were damaged, and the brake-van was knocked off the rails.

Description.

Windsor Bridge sidings cabin, which is about $1\frac{3}{4}$ miles from Victoria station, Manchester, is situated on the south side of the main lines, about 1,030 yards from Pendleton new cabin, the next towards Wigan, and about 510 yards from Windsor Bridge junction cabin, the next towards Manchester. The signalman has to attend to the signalling, &c., of three up and three down lines and an up loop goods line, entered by facing-points on the up local line about 165 yards on the Wigan side of the cabin, which contains 39 working levers. The signals for the up local line (to which alone it is necessary to refer) are an up home-signal, about 180 yards west of the cabin, and an up distant-signal, under the Pendleton up starting-signal, about half a mile from the cabin.

Windsor Bridge junction up distant-signal is under the Windsor Bridge sidings up home-signal, and the junction up home-signal can be seen from the sidings up home-signal. The trailing-points of a through crossing leading from the up local line to a siding adjacent to the down local line are about 85 yards on the Manchester side of the cabin, and it was through this crossing that the coal train, which was standing with its van about 100 yards from the cabin, was intended to be taken when its engine had run round it, for which purpose the engine had been sent forward to Windsor Bridge junction, had returned on the down local line and was standing opposite the signal cabin when the collision occurred.

An overbridge crosses the lines about 80 yards on the Pendleton side of the cabin, and the columns supporting the girders of this bridge, together with a somewhat sharp curve make it difficult for the driver of a train on the up local line to know on what line any train he may see in front of him is standing.

The lines in the neighbourhood of Windsor Bridge sidings are practically level.

It was not dark at the time of the collision, and there was some discrepancy in the evidence as to whether the rails were or were not slippery owing to a recent snow shower.

Evidence.

1. *George Tomlinson*, goods guard.—I have been in the service of the Company 40 years, and a goods guard for 30 years. On March 17th I came on duty at 5.30 a.m. to work until 5.45 p.m., and at 4 p.m. I started from Kersley with a coal train for Windsor Bridge sidings, where we were due to arrive at 5.45 p.m. We arrived at 6.15 p.m., with an engine and tender, 24 loaded coal waggons and a brake-van. On arriving at Windsor Bridge sidings the tail of the train was stopped about three waggons lengths on the Manchester side of the through-crossing. It was stopped there preparatory to the engine running round its train. We stopped at 6.15 p.m., and after stopping the engine was detached from the train and ran forward to Windsor Bridge Junction, and thence came back on the down line. After the engine was detached I walked along the train to the waggon nearest to Manchester, intending afterwards to ride down on that waggon into the sidings. My driver passed me coming back from Windsor Bridge junction when I was about half way down my train, and it was shortly after this that the collision occurred. I heard my driver give the alarm whistles just before the collision; this was all the whistling I heard. I did not notice whether any signals were taken off for the Wigan train. I should think the collision occurred about 5 or 10 minutes after the train had come to a stand. I think my train was moved forward about a waggon length when the collision occurred. I was about halfway down my train when it happened. When I first saw the engine of the Wigan train it was not more than 20 yards from the tail of my train. There were no trains at the time moving about between my train and the wall, nor were there any engines shunting under the bridge. My brake-van was knocked off the road by the collision, and two waggons next to it were damaged. The evening was fine; it was not dark. At the time of the collision there were no red lights at the back of my van. I have no idea as to the speed of the passenger train at the time of the collision.

2. *Gerard Pendlebury*, engine driver.—I have been in the Company's service 17 years and a booked driver three years. I commenced work on March 17th at 5 p.m. to remain on duty till 4 a.m. next morning if required. I was driving engine No. 393, working the 5.43 p.m. passenger train from Wigan for Manchester. It is a six wheel coupled goods engine with a six wheel tender. It is fitted with the automatic vacuum-brake applying to the tender wheels, there being no brake on the engine wheels. My fireman was Joseph C. Marsden. He is my regular fireman, having been with me about a month. We left Wigan punctually at 5.43 p.m., the train consisting of the engine (running tender first) and six passenger vehicles. The engine was not turned at Wigan because we wanted to run engine first from Manchester where there is not time to turn. The vacuum-brake applied to all the vehicles comprising the train, as well as to the tender. The brake was in good order. We stopped at all stations and kept good time, leaving Pendleton at 6.25 p.m., the next stop being Salford. The next signals to Pendleton are those for Windsor Bridge sidings, and I found the distant-signal for the sidings box on; this is the signal below the starting-signal at Pendleton; and on coming in sight of the sidings home-signal I found it off; I kept the signal in view till I passed it, it remaining off; but the distant-signal for Windsor Bridge junction (which is below the sidings home-signal) was at danger when we approached and passed it. I saw a train standing on the line at the Manchester side of the bridge as I was coming through it, but did not know what line it was on, till on passing the signal-cabin I realised that the train was on the up local line, my attention being called by several people signalling me with their hands to stop. I did not notice any signal from the cabin. At the time I got the alarm I think my speed was from 15 to 20 miles per hour. Steam had been shut off on passing Windsor Bridge sidings home-signal, on seeing the distant-signal for the junction at danger; then just after passing through the bridge, on seeing that the home-signal for the junction was off, I applied steam again and then shut it off when I saw and heard of the obstruction; having shut off steam, I applied the vacuum-brake with full force (having 21 inches of vacuum at the time) and used up the whole of it; after this I reversed the engine and put steam against it. With these appliances I think I reduced the speed to eight miles per hour on striking the rear of the coal train, which I drove forward about four yards. The only pair of wheels in my train which left the rails were the trailing wheels of the second vehicle from the engine, which was a brake-van. Neither I nor my fireman was hurt so as to have to go off duty. The rails were slippery owing to snow having fallen during the day.

3. *Joseph C. Marsden*, fireman.—I have been in the company's service 6½ years, and a fireman for three months. On March 17th I was driver Pendlebury's fireman, and worked the same hours as he did. I corroborate Pendlebury's evidence except that I think we were a little past the signal cabin when it was realised that the coal train was on our line, and I do not think that the speed ever exceeded 16 miles per hour, and that it was reduced to seven or eight miles per hour on collision. I was slightly hurt in the knee, but I had not to go on the sick list. Neither Pendlebury nor I jumped off. The evening was lightish.

4. *George Henry Cox*, passenger guard.—I have been in the company's service ten years, and a guard for four years. I commenced duty on March 17th at 8.40 a.m. to sign off at 8.30 p.m. I was guard of the 5.43 p.m. passenger train Wigan to Manchester. My train consisted of engine and tender, third-class carriage, brake-van, two composites, and two third-class carriages. With the exception of the van I believe that all the vehicles had six wheels. I was riding in the van, and I could if necessary apply the automatic vacuum-brake with which the train was fitted throughout. I was alone in the van. We left Wigan at right time and kept time along the road stopping at all stations. We left Pendleton at 6.25 p.m., having next to stop at Salford. On leaving Pendleton, Windsor Bridge sidings distant-signal was at danger, but on sighting the home-signal it was off, and the Windsor Bridge junction distant-signal was at danger. I did not see the junction home-signal. Just after my van had passed from under the Windsor Bridge I saw a goods guard on the ground waving to us to stop, and much at the same time I heard alarm whistles from an engine. I attempted to put on my hand-brake but before I could give it more than two or three turns we were into the coal train. I do not think the speed exceeded 12 miles per hour when we got the alarm. The vacuum-brake was applied before the collision occurred, I both saw the gauge alter and heard the valve open. The gauge had shown 19 inches, and it was all used upon the application of the brake. I do not think the speed had been reduced below eight miles per hour when we struck the train. When the collision occurred I was holding on to the brake-handle. I was injured, and have been on the sick-list ever since. I saw no wheels of my train knocked off the road. I had no conversrtion with the signalman after the accident. The collision occurred at 6.28 p.m., and I noticed no snow on the rails at that time. I heard my driver whistle just before the collision.

5. *Edmund G. Yates*, signalman on duty at Pendleton, said:—I have been in the service ten years, and a signalman for seven years. I have been employed at Pendleton about seven months, and came on duty there at 2.0 p.m., for an eight hours' shift on March 17th. I am alone in the cabin, and book my own trains. The Kersley coal train passed at 6.15 p.m. on the up slow line, and it was cleared to me from Windsor Bridge sidings cabin at 6.19 p.m. I offered the passenger train to Windsor Bridge sidings at 6.22 p.m., and it was accepted at the same time, it arrived at Pendleton at 6.26 p.m., and started at 6.27 p.m. at which time I gave it "On line" to Windsor Bridge sidings. The evening was clear, and it was just growing dusk. The rails were dry, no snow having recently fallen. The signalling between me and Windsor Bridge sidings cabin had gone on properly since I had come on duty.

6. *Thomas Speed*, signalman on duty at Windsor Bridge junction cabin.—I have been in the Company's service about 18 years and a signalman nearly all the time. I have been employed at Windsor Bridge junction cabin since it was opened, about six years ago, and I came on duty there on March 17th, at 2 p.m., for an eight hours' shift. I received the "Be ready" signal for the engine of the coal train at 6.18 p.m. It arrived at 6.20 p.m., and returned on the down line at 6.22 p.m., and it was cleared at 6.28 p.m. from Windsor Bridge sidings box. I received no signal for the coal train itself. I was not aware then whether the train was standing in my section or not. Two practices are adopted with regard to trains terminating their journey at Windsor Bridge sidings, sometimes the train is given "On line," and sometimes only the engine. The evening was fine, and after the collision occurred it was light enough for me to see one waggon of the coal train after the passenger train had struck it and pushed it round the curve. I did not hear the noise of the collision. The passenger train was offered to me at 6.26 and I "accepted" it at 6.26; it was given "On line" to me at 6.28 and I took off my home-signal as soon as I got "clear" for the Horwich passenger train from Oldfield Road, which signal I received at 6.28. If the coal train had been signalled and not the engine only, I should have waited to have the signal cancelled after the engine had run round before accepting another train.

7. *Alfred Smith*, signalman on duty at Windsor Bridge sidings cabin.—I have been in the Company's service about $11\frac{1}{4}$ years, and have been a signalman $10\frac{3}{4}$ years. I have been at Windsor Bridge sidings cabin $6\frac{1}{2}$ years where I came on duty on March 17th at 2 p.m., for an eight hours' shift. I have a boy as train-booker in the cabin to assist me. I received the "Be ready" for the coal train at 6.13 p.m. from Pendleton and "accepted" it at the same time, received it "On line" at 6.14, and it arrived at 6.18, the home-signal having been lowered when the Windsor Bridge junction signalman "accepted" the signal for the engine to go forward. The engine went forward at 6.18 p.m. and it came back from the junction to my home signal at 6.24. I had to detain the engine at my home-signal because a coal train for Atherton was leaving the sidings on the down slow line, and at this time the Kersley coal train was standing on the up local line with the rear of it a short distance on the Manchester side of the through crossing. I received the "Be ready" signal for the Wigan passenger train at 6.22 p.m., and I accepted it at the same time; had I remembered that the coal train was standing where it was I should not have accepted the "Be ready" for the Wigan train. The passenger train was given "On line" at 6.26 p.m., and I turned the needle in answer to the signal, again forgetting that the coal train was standing on the line, and I gave the passenger train on to Windsor Bridge junction at 6.26 p.m.; the "Be ready" signal was accepted upon which I pulled off my home-signal. After taking on the Wigan train I let the engine of the coal train past my down home-signal, pulling that signal off for it to go ahead being under the impression it was another engine and forgetting that it was the engine of the coal train. When it stopped in front of my cabin and began to whistle I remembered what it was, and also the fact of the coal train standing on the main line. I then looked towards Pendleton at which time the Wigan train had passed my home-signal, being between it and the bridge, and it was too late to stop it by throwing up my home-signal. I then ran to the window and did all I could to attract the driver's attention, and the driver of the coal train continued to whistle until the engine of the Wigan train had passed him; other signals were given for the same purpose, but I think the driver was past the cabin before he realised the danger ahead. I think the train passed the cabin at a speed of about 20 miles per hour. I saw the home-signal for the junction taken off just as the engine of the Wigan train came through the bridge. This was after the signalman at the junction had accepted my signals. I cannot account for my forgetting the fact of the coal train standing on the main line. I am not aware that there is any rule permitting me to give only the engine of the train, and not the train itself, on to Windsor Bridge junction. There was no use in sending the coal train through the facing points into the loop because the train could not be disposed of on the loop. I have been in the habit of dealing daily with this train as I dealt with it on this occasion, and I never remember signalling on anything but the engine to Windsor Bridge junction. I never remember the train being drawn into the loop by another engine. There are 44 levers in the cabin, 39 in use, and five spare. There are six passenger lines, three up and three down, and the loop line adjoining them. The train-booker did not call my attention to the fact that there was a train standing on the main line, he was busy at the telephone at the time. I gave "Line clear" to Pendleton for the coal train as soon as it had passed my crossing. I gave "clear" thinking that what would follow would be a goods train or light engine which I could have accepted according to rule.

8. *Benjamin Bullough*, train booker on duty at Windsor Bridge sidings cabin.—I have been in the service of the Company nine months, and am 16 years of age. On 17th March I came on duty at 6 p.m. to remain on duty till 6 a.m. next morning. I made the entries in the train book. As a rule these entries are made from what I hear on the bells, and the particular entries referring to the trains in question are correct. I was aware that the engine of the coal train went forward to Windsor Bridge junction, leaving the coal train on the main line, and I was aware that the "Be ready" for the passenger train was received at 6.22 p.m., and signalman Smith told me he had "accepted" it, and it was put "On line" at 6.26 p.m. At this time I was telephoning another coal train to Brindle Heath junction, and I forgot all about this coal train standing on the main line. I had seen the coal train arrive, but did not notice it again.

Conclusion.

This collision between a passenger train and the waggons and van of a coal train was caused by the forgetfulness of, and breach of rules by, signalman Alfred Smith on duty in Windsor Bridge sidings cabin.

The coal train had arrived on the up local line at Windsor Bridge sidings cabin at 6.18 p.m., and stopped with its brake-van 275 yards inside the up home-signal or 95 yards on the Manchester side of the signal-cabin, a few yards clear of a crossing from the up line to sidings on the down side of the down line through which crossing the train had to pass, these sidings being the terminus of its journey. It being necessary for the engine to run round its train before taking it into the sidings (an operation which could not be conveniently performed in the sidings) the engine was uncoupled, went forward to Windsor Bridge junction on the up slow line and came back on the down local line to the down home-signal where it stopped at 6.24 p.m., as another coal train was crossing from the sidings to the down local line. As soon as the coal train had stopped with its van 275 yards inside the up home-signal, Smith committed a breach of rules by giving "Line clear" to Pendleton for this train, being, he says, under the impression that the next train to come would be a goods train, and this he might without breach of rule have allowed to come as far as his home-signal. At 6.22 p.m. the Pendleton signalman offered Smith the Wigan passenger train and the latter, quite forgetting that the coal train was standing on the up slow line, at once accepted it. The "On line" signal for the Wigan train was received at 6.26 p.m., upon which Smith, still forgetting the coal train, pegged his needle to "Train on line," and gave the "Be ready" signal to Windsor Bridge junction, where it was immediately accepted, upon which Smith pulled off his home-signal, the junction home-signal, which is visible from the sidings home-signal, being taken off at 6.28 p.m., upon Smith giving the Wigan train "On line" to the junction signalman. Smith only realised the mistake he had made when the engine of the coal train (which he had forgotten at the time to be that engine) had come forward on the down line after the signal had been lowered and stopped in front of his cabin when the driver whistled for the crossing to enable him to set back on to his train. The Wigan train had by this time passed the home-signal, so that it was too late to do any good by throwing it to danger; but Smith rushed to the window and did all he could to attract the driver's attention; he thinks the engine had passed the cabin before the driver realised the danger. Smith cannot at all explain how he came to forget the coal train which was standing in full view of his cabin. He had no particular pressure of work at the time to account for his conduct. In addition to his forgetfulness he committed two breaches of rule, the one in giving "Line clear" to Pendleton upon the arrival of the coal train while it was still standing 275 yards inside his up home-signal, and the second, in not giving the coal train instead of only its engine "On line" to Windsor Bridge junction, the front of the train being more than 300 yards forward in the short section of 510 yards between the two cabins. The observance of these rules (especially of the latter) would have acted as a check on Smith's forgetfulness.

He has an excellent record, has been a signalman $11\frac{1}{4}$ years and had been on duty about $4\frac{1}{2}$ hours out of a spell of eight hours when the collision occurred.

The train booker, a lad of 16 years of age, knew that the coal train had been left on the line at 6.18 p.m., but being engaged at the telephone forgot all about it when Smith told him that the Wigan train had been given "On line" at 6.26 p.m.

Upon the arrival of the coal train, the guard walked along the train intending to ride into the sidings on the waggon next Manchester, and was about the middle of the train when the collision occurred. He heard his driver whistle just before the collision, and first saw the engine of the Wigan train when it was about 20 yards from his brake-van.

Neither the guard, driver, nor fireman of the coal train appear to be in any way to blame.

Pendlebury, the driver of the passenger train was in charge of a six-wheeled coupled goods engine, and six-wheeled tender, there being no brake on the engine, but the automatic vacuum-brake applying to the tender wheels and to 24 out of the 34 wheels of the six vehicles composing the train. His engine was running tender in front, because he wished to return engine in front from Manchester where there would not be time to turn his engine. He kept time at all stations and left Pendleton at 6.25 p.m., (the time also given by the guard, the signalmen's time being one to two minutes later) having next to stop at Salford; on leaving Pendleton he found Windsor Bridge sidings distant-signal at danger, but the home-signal off when he came in sight of it, the distant-signal for Windsor Bridge junction, which is below the sidings home-signal, being at danger. Steam had been shut off on seeing the distant-signal at danger, but just after passing through Windsor Bridge he saw that the junction home-signal was off, and consequently again put on steam. Pendlebury had noticed the coal train in front of him on coming through the bridge, but owing to a curve in the

line did not realize what line it was on, and it was not till he was passing the signal-cabin, that, at the same time hearing shouts and whistles, he became aware that it was standing on the line on which he was approaching it. He thinks that his speed when he got the alarm was 15 to 20 miles an hour, and that by shutting off steam, applying the vacuum-brake, the vacuum being 21 inches at the time, reversing his engine and putting on steam the reverse way, the speed was reduced to about eight miles an hour on collision, the force of it driving forward the coal train about four yards.

Pendlebury's evidence is more or less corroborated by his fireman and guard.

No blame is, I think, to be attached to either of these men. It was no doubt most misleading for the driver to find the home-signals, both behind and in front of the coal train, off as he approached them, and these signals being in that position may well have contributed to allay any doubts he may have had as to the position of the coal train when he first saw it.

Considering that the continuous brake did not apply to the engine wheels, which carried about a quarter of the weight of the whole train, the action of the brake may be looked upon as fairly satisfactory.

Although technically the number of unbraked vehicles in the train did not exceed that allowed by the order issued consequently upon the Act of 1889, it is a great mistake to run trains with the heaviest vehicle unbraked, and I am glad to find that the Lancashire and Yorkshire Company are going on with the fitting of all engines likely to be required for passenger traffic, with continuous brakes for their wheels.

It is important that sufficient time should be allowed for an engine to be turned at the end of its journey and not, as in the present case, to have to be run tender first from Wigan because there was not time to turn it at Manchester.

It is further most desirable that alterations should be effected at Windsor Bridge sidings to enable the engines of coal trains to run round them without using the main lines for the purpose. As there are facing-points on the up local line leading to the Windsor Bridge sidings, it ought not to be difficult to provide the necessary arrangements for this purpose.

I have, &c.,
C. S. Hutchinson,
Major-General. R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

Printed copies of the above Report were sent to the Company on the 17th May.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W
7th February 1893.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 24th ultimo, the result of my enquiry into the circumstances attending a collision which occurred on the 20th ultimo, at Hulton's siding, near Chequerbent, on the London and North-Western Railway.

In this case the 8.30 p.m. down passenger train from Bolton to Earlestown (consisting of tank-engine, running bunker in front, one third-class brake-carriage, one third-class and one composite carriages, and one second-class brake-carriage) when passing Hulton's siding at 8.41 p.m. came into collision with a goods brake-van, attached to a tank-engine, which was standing on the down main line, between the down home and down starting-signals, waiting to be set back into the down sidings.

The goods brake-van was broken up, and both the engines and all the vehicles in the passenger train were slightly damaged.

(For return *see* Appendix).

Up to the present time 20 passengers have complained of injury, but it is stated that in one case only were the injuries of a serious nature.

The guard of the passenger train was slightly injured.

Description.

Hulton's siding block-signal cabin is on the double line from Kenyon junction to Bolton, and it is situated between Daubhill and Chequerbent stations, 1 mile 146 yards from the former and 999 yards from the latter station.

The line, running from east to west, is nearly straight, and there are sidings upon both sides. From the down distant-signal to within 70 yards of the point of collision the gradient is a rising one of 1 in 600, then changing to a rising gradient of 1 in 100.

The signal cabin is on the north or up side of the line, and east of the cabin is an up siding known as Wigan siding, the Hulton colliery sidings being on the south or down side of the line opposite to and west of the cabin.

The down distant-signal is 1,148 yards, and the down home-signal is 108 yards, east of the cabin, on the proper side of the line, and the Chequerbent down-distant signal is a lower arm on the Hulton's siding down home-signal post.

The following distances westwards from the home-signal should be noted:—

To trailing points on down line of through road out of Wigan siding		46 yards.
„ centre of signal cabin		108 „
„ trailing points on down line of connection with Hulton's siding		297 „
„ point of collision	(about)	326 „
„ down advance starting-signal	„	370 „

The Chequerbent down distant-signal arm is slotted by Hulton's siding down home-signal arm above it, and the signalman in Hulton's siding signal cabin has instructions to work to this signal, that is, when this signal is at danger, to keep his down home and distant signals at danger until an approaching train is nearing his home-signal and has been brought quite under control. Absolute block working is in force.

The following are extracts from the Company's book of rules and regulations which bear upon the facts leading to this collision.

No. 181A:—

Signalmen must exercise great care in shunting carriages and other vehicles. In all cases where they cannot see the points they must not move them until they have obtained a signal from the shunter or guard, or from the engine-driver or fireman in the case of a light engine, that the last vehicle, or light engine, as the case may be, is clear of the points.

After shunting operations of any description, the signalman must see, or have word from the guard (or if a shunter has been employed, then from him), that the carriages or other vehicles have been left secure on the sidings, and that the main lines are clear before lowering the signal to allow any train or engine to pass. In the case of a light engine the fireman will be held responsible for advising the signalman.

No. 205:—

No train must be allowed to travel on the line after sunset, or in foggy weather, or during falling snow, unless there shall be attached thereto, and lighted, a red tail lamp and two red side lamps (except where it is otherwise provided), and the guard if there be only one, or the rear guard, if there be more than one, must see that these lights are kept properly burning throughout the journey.

No. 224:—

Guards performing shunting operations at sidings must, in all cases, take care that the vehicles are left clear of the main line, and within the safety points . . . . . .

Guards and shunters are held responsible for seeing that the trains are clear of the points, and that the points are properly set before a signal is given to the engine-drivers to set back, and they must render the signalman every assistance they can in the shunting operations.

No. 225:—

Where a train is shunted after dusk for another train to pass, the tail and side lamps must be removed, or so disposed of as not to exhibit the red lights to a following train . . . . . .

No. 275A:—

. . . . . In case of detention at a home or starting signal, the engine-driver must sound his whistle, and if still detained, the guard or fireman must go to the signal-box and remind the signalman of the position of the train or engine . . . . . .

The duty must be performed by the guard or fireman in accordance with following instructions . . . . . .

In the case of a goods train with only one guard, when stopped at the home-signal, by the fireman; when stopped at the starting-signal by the guard . . . . . .

The same arrangement must be carried out when an engine or train is standing on the main line waiting to be crossed on to the other line or to be let into a siding.

In the case of a train performing shunting operations in charge of a shunter, the shunter must go to the signalman.

Evidence.

Robert Ennion states: I have been a signalman for 16 years, and in Hulton's siding box for 8 years; previously I had been a platelayer for 2½ years. On the 20th inst. I came on duty at 6 p.m. for 12 hours. I had left duty at 6 a.m. on the same day after 12 hours' work. There are 46 working levers in the box, and absolute block working is in force, Daubhill being the nearest block post in one direction and Chequerbent in the other. An engine arrived from Chequerbent on the up line at 8.22 p.m. to work a special of coal from Hulton's siding to Garston. The brakesman accompanied the engine, but the brake-van was in one of the north sidings, having been worked out from Bolton previously. I stopped the engine at the box, and gave the men instructions where the brake-van was, and where the Garston traffic was. I told the driver to go into the Wigan siding, which is on the north side, and to attach his brake, to take it across the road, and to go into the loop, which is on the down side of the line at the Chequerbent end of the sidings. My mate left me a memorandum, showing that there were 21 waggons, including the brake-van, in the north siding. This was all the siding would hold, and I concluded that the engine could not get in clear, or I would have kept it in there until the 8.30 p.m. train from Bolton, and the 8.10 p.m. train from Kenyon, had passed. These are both passenger trains, and are due at 8.37 p.m. and 8.27 p.m. respectively. When the engine had got into the siding I called to the driver, and asked him to come out, giving him a signal to do so. He came out with the brake-van attached, and crossed on to the down line, and then passed my box and went beyond the points for the loop, which are situated about 190 yards away from the signal-box. When the brake passed me the tail light only was lighted. I heard the engine whistle, and I concluded it was for me to open the points for the driver to set back inside. I set the points for the loop, and gave the driver a white-light signal with my hand-lamp to come back. I then put my lamp down, and went to put the number of the engine on the requisition. I then heard a second whistle, and I concluded that the engine and brake were inside, and I shut the points again, closing the engine and brake inside, as I thought. Shortly after that I received from Daubhill the "Be ready" signal for the 8.30 p.m. passenger train from Bolton, which I accepted at 8.32 p.m. I received the "Entering section" signal at 8.36 p.m., and then sent the "Be ready" signal on to Chequerbent, which signal was accepted at once. As soon as Chequerbent accepted the "Be ready" I pulled off the down home and down starting-signals. I did not pull my down distant-signal off because Chequerbent did not pull off his distant-signal, which is on the same post as my home-signal. This is in accordance with the printed instructions in my box. After the passenger train had passed my distant-signal, at danger, I saw that the distant-signal from Chequerbent was lowered, as well as my home-signal—I had lowered my home-signal before the train was in sight. After I had accepted the "Be ready" I saw the side and tail lamps on the brake attached to the engine, and I thought they were on the loop. There were 16 waggons in the loop. I think that the engine and brake-van must have been standing down at the points for about ten minutes before the collision occurred, as a goods train from Atherton passed my box for Bolton at 8.30 p.m., after the engine and brake-van had crossed over, and the collision occurred at 8.40 p.m. As the passenger train was approaching my home-signal the driver whistled. I looked ahead and saw the three red lights on the brake-van, and concluded that the driver of the passenger train had whistled because the brakesman had not turned his lights, as he should have done if the train had been standing in the siding. I saw no other red light except those upon the brake-van, and nobody came back to tell me, or to remind me, that the engine and van were still standing on the main line. When the engine and van got over the points I received no signal from the brakesman that they were clear over them. I called the driver back without receiving any signal from the brakesman that they were clear of the points. I should, according to the rules, have received a white-light signal from the brakesman before setting the points and calling the engine and brake-van back, and, according to the rules, he should have come back to tell me when the engine was safely in over the safety-points. It is customary for drivers to whistle when inside, and I have been in the habit of taking this as sufficient. The brakesman did not come back on this occasion. The signal I gave for the driver to set back was a white light waved inside the signal-box in his direction. I did not go outside my box or wave the lamp out of the window. I think there was a minute or 1½ minutes between the two whistles given by the driver. There was time for the engine and brake to have got in before the second whistle was given. The driver did not whistle at once after I set the points, but after a short interval; when I concluded he had got inside. I think that the red lights were burning quite properly when the passenger train was approaching. It was a clear night, and these lights should have been seen a long way off. I am quite sure that I never lowered my distant-signal for the 8.30 train. I had put the signal to danger behind the preceding train, and the repeater in my box showed that the arm was at danger. The 8.30 train passed at 8.40, being due at about 8.38 p.m. The speed seemed to be much the same as usual when passing my box. I cannot say whether steam was on or off, and I did not see any brakes on. I did not see the men on the engine. According to the instructions, I should, when the Chequerbent down distant-signal is at danger, keep both my distant and home signals at danger until the approaching train has been brought thoroughly under control, when the home-signal may be lowered if the line is clear for the train to proceed. I have not been in the habit of keeping my home-signal at danger in such cases, but only my distant, either by day or night, for there is no disc in my box working with the Chequerbent distant-signal to show when this signal has been taken off. There is no way for me to know, unless I take off my home-signal, whether the Chequerbent distant-signal arm is being kept at danger by the Chequerbent signalman, or by my home-signal being at danger. I have for the last two years asked that a disc might be provided.

When I pulled off my home-signal lever the Chequerbent distant-signal arm did not drop, so I knew that the Chequerbent signalman had not taken it off. The arm did not drop until the 8.30 train was inside my distant-signal. When the engine and van were put across from the Wigan siding to the down line I did not block back to Daubhill. It is the rule that this should be done, but it is frequently omitted. It is always done when a train is crossed on to the wrong line, but not when it is crossed on to the proper line. We have asked that a shunter might be appointed to assist in the sidings, or for the Colliery Company to leave a man on the sidings to assist until all the traffic has been cleared out. No shunter has been sent. I think the collision might have been avoided if there had been one here. As there is no shunter the duty of filling in "requisitions" for drivers, which the shunter would do, falls upon the signalman at this box, and he has not, therefore, in my opinion, sufficient time to attend to his other duties. There is a great deal of shunting work at Hulton's siding. Four regular down trains and six regular up trains do work here. Besides this there are specials, of which sometimes there are four down and several up. The drivers of all specials starting from Hulton have to get a "requisition" filled in. I cannot remember ever to have had to fill in more than four or perhaps five requisitions in one night. There are also frequent occasions when brakesmen come to the cabin for me to sign their sheets. All brakesmen whose work terminate here have to get my signature to their sheets. On this occasion I was anxious to get the special train away in time, and I was occupied in filling in the requisition for the driver, after giving the signal for him to set back into the siding.

Henry Houlding states: I have been six years in the service and a brakesman for two years. On the 20th instant I came on duty at 7 p.m. I cannot say what time I would have got off duty in ordinary course. I had left duty the previous day at 11 a.m. after 12 hours' duty, so that I had been 20 hours off duty. I commenced duty at Atherton. I was ordered to work a special from Hulton's siding to Garston, and I arrived with my engine at Hulton's siding at about 8.20 p.m. The engine stopped at the box, and the signalman told us that the brake was in Wigan siding, and that the traffic was in Hulton's siding on the other side of the line. He told us to get the brake, take it across the road, and shunt it into Hulton's siding, but the driver could not get the engine clear of the main line, into Wigan siding, until he had set back some waggons. He did this and got the engine clear inside by an engine length. The driver then whistled to the signalman to close the points, but I did not give any signal myself. I intended to stand there until I had lighted my lamps, but the signalman shouted to us to come out. We went across the road with the brake-van, and we came to a stand over the points for setting back into the loop. I had one lamp lighted when we passed the signal-box, and the others I lighted after coming to a stand over the points. I think we had stood over the points for about five minutes before the collision occurred. As soon as I had lighted the lamps I got out of the brake-van, and went towards the signalman to ask him where he was going to put us, as I thought he had forgotten us. When I got about 10 yards back from the brake-van I noticed the signals off for the down road, and immediately saw a passenger train approaching. I turned a red light towards the approaching train, and ran towards it with a red light. It did not occur to me to call to my driver to go ahead. When my engine and van had passed over the points I did not give the signalman a signal to indicate to him that we were clear, being busy with the lamps when coming in to fetch the van out of the Wigan siding. I did not give the signalman notice by word of mouth that the engine was clear inside, but the driver whistled to indicate that he was clear. When the collision occurred my engine and van were standing between the home and starting-signals, the van being about a length ahead of the points. After coming to a stand the driver whistled. We were still detained, but I did not go back to the signalman immediately, as laid down in rule No. 275a, being engaged in lighting my lamps. It being a windy night the operation was rather a difficult one. My van was on the Bolton side of the engine, and was struck by the passenger engine. It was broken up. I do not think my lights were burning brightly at the time as they had only just been lighted. They were oil lamps. As I was starting back to the signal-box I saw the fireman, and I believe he called out to me, but I cannot say for certain. The passenger train had passed the signal-box when I first saw the head-light of the engine. I think it was running at 15 or 16 miles an hour when it passed me. I could not tell whether the brakes were on or off. I think there were two or three minutes between the two whistles given by my driver. I did not hear any whistling from the passenger engine. According to rule (No. 205) I should not be out on the main line at all without my lamps being lighted. The signalman called us out of the Wigan siding before I had time to light my three lamps, so I had to do so after getting out on the main line. That is the only reason I had for not giving the proper signal to the signalman after we came to a stand over the points.

Thomas Thompson states: I entered the service in 1877, and have been an extra driver for five years. On the 20th instant I came on duty at Plodder Lane to work a special train from Hulton's siding to Garston. There was no time fixed for arrival at Garston, but in any case I would have been relieved on completing 12 hours' duty. I had left duty on the 19th at 7.20 p.m. after three hours' duty. It was about 8.20 p.m. on the 20th instant when I arrived at Hulton's siding box on the up line, and I came to a stand at the box. The signalman told me to draw across, and to go into the Wigan siding for the brake-van. I went across, and, after pushing back some waggons which were in the siding, got clear inside. As soon as I got clear in, I opened my whistle to let the signalman know that we were inside. The signalman then called me out with a white light, and shouted as well. I came out with the brake-van, and drew up to the bottom crossing on the down main line. I then opened my whistle to indicate to the signalman that I was over the points there. Getting no signal from the signalman, I opened my whistle a second time, and I received no signal in response to that, so I sent my fireman to tell the brakesman to go back to the signal-box to ask the signalman why he was keeping us there. My fireman went after we had been standing a matter of four or five minutes. I did not see the passenger train approaching until it was close upon me, and I had only just time to jump off. My view was obstructed by the brake-van. My engine was a tank-engine, bunker in front, and the brake-van was behind. My fireman had not returned to the engine at the time of the collision. I was standing with my engine about 30 yards from the starting-signal. I did not see the signal lowered. I was looking for a signal in the opposite direction. I knew we had to set back into the siding, as those were the instructions I had received from the signalman, and while waiting I was expecting a signal from him to set back, but I saw no signal. Just before the collision occurred I saw the brakesman go back towards the signal-box. It was a fine night, but dark. About five minutes before the collision I saw an up goods train pass. According to the rules the brakesman should have given a signal to the signalman when we were clear over the points, but it is also customary for drivers to whistle. There was an interval of about a minute between the two whistles I gave. I did not see or hear the siding-points shifted. The brake-van was, I think, one or two engine-lengths ahead of the points. I do not think I was standing more than five minutes altogether. My hand-brake was on upon the engine when we were struck. The engine was driven ahead for 5 or 10

yards. I heard no whistling from the engine of the passenger train. The engine was not in steam. I cannot estimate the speed.

Mackay Travers states: I have been three years in the service, and an extra fireman for two years. On the 20th instant I was firing for driver Thompson. I have heard his evidence read over, and, so far as I know, it is correct. After standing for some time on the down main line at Hulton siding, over the points leading into the loop, my driver told me to go to the brakesman to see if he had gone to the signalman. When I got to the brake-van the brakesman was on his way to the signal-box. I shouted to him and told him the points were closed. I then saw the passenger train coming and called out to my mate. I did not see the train until it was about three coach-lengths from me, after I had shouted to the brakesman. When the collision occurred I was outside the up line, about opposite to the trailing buffers of the brake-van. The lights on the van were lighted, but had not burnt up properly. There was a tail light a little above the level of the buffers, and two side-lights at a higher level

Henry Hilton states: I have been in the service about 33 years, and a driver about 26 years. On the 20th instant I came on duty at 12.30 p.m. at Plodder Lane, to work till 10.50 p.m. I had left duty at about 10 p.m. on the previous day after $10\frac{1}{4}$ hours' duty. My engine, No. 56, is an eight-wheeled side tank-engine with radial axles at each end, and with four wheels coupled. The brake on the engine was a steam-brake, applied by the same handle as that working the automatic brake apparatus. I was driver of the 8.30 p.m. passenger train from Bolton. The train consisted of four vehicles, all fitted with the automatic vacuum brake. We left Bolton at right time and arrived at Daubhill one minute late. On leaving Daubhill the starting-signal was off. On sighting the distant-signal worked from Hulton's siding box I saw that it was off. The Hulton's siding home-signal and starting-signal, and the two distant-signals worked from Chequerbent, were all off. I might have been about a yard or two past the home-signal when I saw three red lights, but they were very faint and dim. It would be a matter of 130 to 140 yards to these lights from where I first saw them. This is only an estimate on my part, as I do not know the exact distance. As soon as I saw the red lights I applied the vacuum brake. I was running at the time at about 30 miles an hour, and I had reduced speed to about 15 miles an hour, or perhaps less, before I struck the brake-van and engine. I think I had only just passed the home-signal when I first saw the red lights, and I am certain the brake was on before I passed the signal-box. I was keeping a good look-out ahead, and I think that it was because the red lights were burning dimly that I did not see them sooner. I knew as soon as I saw them that they were on the main line. I did not get any hand-signal from the signal-box, but I got a red-light signal from the brakesman, who was making his way to the box, but I had seen the red lights on the van before I got this signal. My steam had been shut off for 400 or 500 yards before I first sighted the red lights on the brake-van. It is the usual practice to shut off steam, as the train will run of itself at this point. It was rather frosty, and the rails were in such a state that it was very difficult to stop. I was running with 21 or 22 inches of vacuum. My small ejector was open all the time I was running. The brake acted well, as it had done at all the station stops I had made. I was thrown against the fire-box, but neither I nor my fireman were hurt. I was running bunker in front. I am positive that the Hulton's siding down distant-signal was off when I passed it.

John Taylor states: I have been nine years in the service, and a fireman for five years. On the 20th instant I was fireman with driver Hilton. His evidence is correct. I saw that the down distant-signal worked from Hulton's siding box was off; in fact all the signals were off up to the point where the collision occurred. I first saw the red lights on the goods van when we were between the home-signal and Hulton's siding box. I immediately applied the hand-brake on the engine, and my mate applied the automatic vacuum brake. I opened the sand-valves; we were running with 22 inches of vacuum.

Thomas Wilkinson states: I have been in the service for $10\frac{1}{2}$ years, and a guard for about four years. On the 20th instant I came on duty at 11.30 a.m. to work till 11 p.m. I had been on duty for the same period on the previous day. It was a clear night. I had been on duty for about nine hours when the accident occurred, and had been $12\frac{1}{2}$ hours off since my last duty. I was guard of the 8.30 p.m. train from Bolton, which was marshalled as follows: Engine, third-class brake-carriage, third-class and composite carriages, and second-class brake-carriage. The train was fitted with the automatic vacuum brake, and I was siding in the rear brake compartment. All the carriages were six-wheeled carriages. After leaving Daubhill I was sorting letters, and the first intimation I had of anything being amiss was by being thrown down on the floor. I saw no signals, nor did I hear any whistling. I did not hear the automatic brake-valve in my brake-compartment open. I did not feel the brake go on; but I think it must have done so, as there was no rebound after the collision. The collision occurred at 8.41 p.m. according to my watch. Immediately after the collision I alighted from my van and satisfied myself that the up line was not obstructed, and I then went to the signal-box to protect my train. I think there were about 50 passengers in the train, and on my return to the train from the signal-box all the passengers had been taken forward to Chequerbent, the station-master having taken them in charge. The brake had acted well on the journey. I was rather dazed by being knocked down, but I have not been off work.

Isaac Briggs states: I have been in the service since 1883, and a signalman since 1884; at Chequerbent for about four years. On the 20th instant I came on duty at 6 p.m. for 12 hours; I had left duty at 6 a.m. I accepted the "Be ready" from Hulton's siding box for the 8.30 p.m. passenger train from Bolton at 8.35 p.m. It was accepted from Atherton at 8.39 p.m., and it was not till then that I lowered my down distant-signal, which is on the same post as the Hulton's siding down home-signal. As far as I know the clock in my cabin was right.

Conclusion.

This collision, which would probably have been a very serious one if the driver of the 8.30 p.m. passenger train had not been keeping a good look-out and been prompt in applying his continuous brake as soon as he saw red lights upon the line in front of him, was principally due to a mistake of Robert Emmon, the signalman in Hulton's siding cabin, who had at the time been on duty for about $2\frac{3}{4}$ hours.

At about 8.22 p.m. a light engine (No. 30) arrived at Hulton's siding from Chequerbent on the up line, and, after crossing into Wigan siding, an up siding east

of the signal cabin, to attach a brake-van, was at once called out by the signalman, and sent across on to the down line, and forward to the trailing points of Hulton's siding, a siding on the down side of the line nearly 200 yards west of the signal cabin, in order that it might back into this siding to pick up a train of loaded coal waggons which it was to take to Garston. After the engine, with the brake-van behind it, had come to a stand, the driver sounded his whistle to show that he was clear over the siding-points, and, not seeing any signal from the signal-cabin to set back, he sounded his whistle a second time, after an interval of one or two minutes. As he was still kept waiting for about five minutes, according to his estimate, he told his fireman to go to the brakesman, who was with the brake-van, and to send him back to the cabin to find out the cause of the delay. The brakesman had already started for this purpose, but had only got about ten yards upon his way when he perceived that the down-signals were off, and almost immediately saw the head-light of the passenger train approaching on the down line, whereupon he ran towards it showing a red light. The passenger train had left Daubhill at 8.36 p.m., having been accepted by the signalman at Hulton's siding as soon as it was offered at 8.32 p.m., and, although there is a discrepancy in the evidence as to the down distant-signal, which the driver and fireman say was off, but which the signalman says was at danger, it is admitted that both the down home and the down starting-signals were lowered for the train, which was therefore approaching Hulton's siding with the signals clear for running on to Chequerbent, the distant-signal for which station was also off. It was not until he had passed the home-signal that the driver caught sight of the three red lights at the back of the brake-van standing on the down line, and he states that he at once applied his continuous brake; but as, when he did so, he was not running at more than 30 or 35 miles an hour, and was still running at a speed of 15 miles an hour when he struck the brake-van more than 300 yards inside the home-signal, it is clear that, unless the driver is mistaken as to the point where he applied it, the brake was not very efficient in its action, for, with two-thirds of the weight of this short train of four vehicles upon braked wheels, it ought to have stopped, or very nearly stopped, if the brake was fully on for anything like 300 yards, considering the moderate speed at which it was running when the brake was applied.

The signalman, who admits that he accepted the passenger train and took off his home and starting signals for it, states that, directly the whistle of the goods engine was sounded for the first time, he pulled over the siding points and gave a white-light signal for the engine and brake-van to set back, putting the points back again into their normal position as soon as he heard the second whistle, which he understood to mean that the engine and brake were clear into the siding, and no doubt he was under this impression when he made the serious mistake which caused the collision, in allowing the passenger train to approach with clear signals, although the goods engine and brake were still on the down main line.

If, however, he had paid proper attention to the rules, this mistake would not have occurred, for he did not receive any signal from the brakesman that the engine and brake were clear over the points before he shifted them, as is laid down in Rule 181A, nor was he informed by this brakesman that the engine and brake were secure in the siding, as under the same rule he should have been.

Further than this, he allowed the engine and brake to come out from Wigan siding on to the main line with only the tail lamp, and no side lamps, lighted, which was a breach of rule No. 205, and, although he actually saw the red lights at the tail of the brake-van after they had been lighted, he took it for granted, without troubling himself to make sure of the fact, that the lights were on the siding, which would have implied a breach of rule No. 225 on the part of the brakesman. He also admitted that he did not act in accordance with the block regulations, for he did not block back to Daubhill when he crossed the engine and brake on to the down line, as he should have done, and he lowered his down home-signal before the Chequerbent down distant-signal was taken off, which is contrary to rule, unless the approaching train is near the home-signal and under complete control.

It should be stated in regard to this last breach of rules, which, however, did not contribute to the accident, that the appliances in Hulton's siding-signal cabin in connection with this Chequerbent signal are defective, for there is no disc in the cabin working with the signal to show when the lever working it has been pulled off at Chequerbent cabin. As the signal, even if pulled off in this cabin, remains at danger until the Hulton's siding home-signal falls, it is clear that the signalman at Hulton's siding cannot possibly tell, until he pulls off his home-signal lever, whether the Chequerbent distant-signal is being kept at danger by his action or by

that of the Chequerbent signalman, and, although he might find out by lowering his home-signal experimentally, it cannot be said that he is given proper facilities for carrying out the rule of working to the Chequerbent signal.

The signalman stated, and it was not denied, that he has for the last two years made application for a disc to be fitted, and this ought most certainly to have been done.

He also gives as an excuse for his mistake that he was occupied in filling in a "requisition," that is a ticket for the driver of the special goods engine, and, although I cannot think that this excuse is sufficient to account for his breaking the rules in several ways, yet, as it appears that a signalman at this cabin has to fill in "requisitions" for the drivers of all special trains, and also to sign the sheets of all goods guards leaving duty at this place, I consider that he is subjected to a great deal too much interruption in the performance of his proper duties as a signalman.

A signal cabin cannot be kept too quiet, and, in my opinion, there is great risk in putting upon signalmen any duty which involves the frequent incursion of drivers and others into their cabins.

In this particular case the signalman alleges that he has frequently asked that, during the hours when there is work going on upon Hulton's sidings, a shunter might be stationed there, upon whom, in accordance with the practice, the duties of filling in these requisitions, &c. would fall.

Such an arrangement, at this and other similar places, would not only be a great relief to signalmen, but would also conduce to the safety of the public.

The brakesman in charge of the engine and brake-van, Henry Houlding, who had at the time been on duty for about $1\frac{3}{4}$ hours, must bear part of the blame for the collision, for he ought not to have come out on to the main line with only his tail lamp lighted, he omitted to signal to the signalman when his train was clear over the siding points, and he delayed too long in going back to the signal cabin, in accordance with rule No. 275A, to remind the signalman that his train was still detained upon the main line.

It must, however, be said for this man that, in coming out of Wigan siding before his lamps were properly lighted, he was acting under pressure from the signalman, and that he was necessarily occupied in getting his lamps to burn at a time when he ought to have been free to attend to his shunting duties. Under these circumstances I consider him to be responsible for the collision in a very minor degree.

The driver of the 8.30 passenger train must, I think, be held free from all blame. No doubt, if the signalman's statement be correct, he ought to have been running cautiously after passing the distant-signal at danger, but I am inclined to believe the statement of the driver and fireman to the effect that the signal was off, while, even if it were at danger, there is no question that the home-signal and the starting-signal were off as soon as they were sighted, which would have justified the driver on increasing his speed so as to pass the home-signal at 30 miles an hour, his estimated speed on this occasion.

The evidence of the brakesman corroborates that of the driver in regard to the dim light shown by the tail and side lamps on the brake-van, and quite accounts for the driver not seeing them sooner than he appears to have done, viz., at a distance of about 300 yards, although if burning brightly they should have been seen for a much greater distance.

No blame attaches to the driver of the goods engine, for, even if the signalman did give a signal for him to set back, it is admitted that it was given only by the waving of a lamp inside the cabin, which might easily have been overlooked.

In conclusion I must observe that this is an accident which, like the recent one near Thirsk on the North-Eastern railway, would have been prevented by the use, in its complete form, of one of the "lock-and-block" systems, for the crossing of the engine and brake-van on to the down line would have locked the block instrument for that line, and also the starting-signal at Daubhill, until the line had been cleared by the passage of the engine and brake-van into Hulton's siding.

I have, &c.,

F. A. Marindin.
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Damage to Rolling Stock.

Engine No. 56.—Buffer-plank, two buffer-castings, and two lamp-brackets broken. Bunker-plate dented.

Engine No. 30.—Buffer-plank, two buffer-castings, and two lamp-brackets broken.

No. 229 second-class brake.—One buffer casting-block broken.

No. 1305 composite.—Two buffer casting-blocks broken, two buffer-rods badly bent, and one headstock broken.

No. 1054 third-class.—Two buffer-castings broken, three buffer-rods badly bent, four buffer casting-blocks broken, two headstocks broken, one quarter-light broken, and one third-class cushion missing.

No. 1081 third-class brake.—Three buffer-rods badly bent, one buffer-casting broken, three buffer casting-blocks broken, and one headstock damaged.

Goods brake-van completely broken up.

Printed copies of the above Report were sent to the Company on the 28th February.

LONDON AND SOUTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
10th February 1893.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 6th instant, the result of my enquiry into the circumstances attending a collision which took place on the 31st ultimo at Richmond station on the London and South-Western Railway.

In this case the 5.43 p.m. down Metropolitan train from Aldgate to Richmond (consisting of tank-engine, running chimney in front, and six passenger carriages, all fitted with the simple vacuum-brake), when entering No. 3 dock platform line at Richmond station at 6.39 p.m., came into collision with a train of eight empty London and South-Western carriages, which had formed the 5.27 p.m. down train from Ludgate Hill, arriving at Richmond at 6.30 p.m.

Some of the buffer fittings of the engine and four of the carriages in the Metropolitan train were broken, and seven of the London and South-Western carriages were damaged, the damage being more than might have been expected, probably because the automatic vacuum-brake upon the empty carriages was hard on. (For a return of damage, *see* Appendix.) Only one passenger made a complaint of injury, and there was no damage to the permanent way.

Description.

The newer part of the station at Richmond, lying on the north side of the main line station, is a terminal station for the Metropolitan and other branch suburban traffic, and has five platform lines, all signalled for arrival and departure. About 281 yards outside, or east, of the station there is a double junction leading from the branch line, on to the main line, and the signal-cabin is situated not far from this junction, and 198 yards outside the station. Between the signal-cabin and the station are facing-point junctions leading from the down line into the various platform lines, the points for a train running into No. 3 platform line being No. 24 and No. 25.

The following are the only two signals to which it is necessary to refer, viz.:—No. 7, the down junction home-signal for the station, which is the middle arm on a post 162 yards east of the signal-cabin, the top arm on this post being the signal for running on to the main line, and the bottom arm being a signal from a siding.

No. 9, the station stop-signal for No. 3 line, which is upon a low post on the right-hand side of the line to which it refers, 185 yards west of the cabin.

The point of collision was about 15 yards from the east end of the platform, which is nearly 150 yards in length.

The following distances westward from the down junction home-signals should be noted:—

To junction points	79 yards.
„ signal-cabin	162 „
„ No. 22 facing-points leading to Nos. 4, 5, and 6 lines	200 „
„ No. 24 „ „ Nos. 2 and 3 lines	242 „
„ No. 25 „ „ No. 3 line only	313 „
„ No. 9 the signal for No. 3 line	326 „
„ outer end of platform	360 „
„ point of collision	375 „
„ buffer-stops	507 „

The line falls slightly into the station, and it is nearly straight from the junction to the station, curving slightly to the right when near the platform.

There is an overbridge just at the end of the platform, one of the piers of which seriously impedes the view of the platform lines from the cabin.

Tail-lights upon a vehicle standing at the point of collision could, however, be seen from the cabin, and from an approaching engine before reaching the cabin.

The line is worked upon the absolute block system outside the station, and one train is not allowed to follow another into the same platform line.

There is a bell communication between the platform and the signal-cabin, but only with reference to outgoing trains, and to the use of one crossing, and there is no control from the station over the trains running into Nos. 1, 2, 3, and 4 lines, although there is for those using Nos. 5 and 6 lines, some of the points on which are worked from a ground frame.

Evidence.

Samuel Cole states: I have been in the service of the Metropolitan Railway Company since 1865, and between 14 and 15 years a driver. I have been accustomed to work into Richmond station as fireman, and driver for 21 years. On the 31st January I came on duty at Edgware Road at 1.30 p.m. to work till midnight. I had left duty at about that time after the previous tour of duty. My engine (No. 53) is an eight-wheeled engine with leading bogie, and driving and trailing wheels coupled. I had worked through the day in the Hammersmith service, and the first trip I made to Richmond was with the 5.43 p.m. train from Aldgate due at Richmond at 6.38. There were six coaches on the train, and the whole train was fitted with the simple vacuum-brake. My engine is fitted with the apparatus for working the simple vacuum-brake only. The brake was in good order. On approaching Richmond the signals were all off for me to run into No. 3 platform road. We sometimes run into one road and sometimes into another. I shut off steam at the distant-signal. When we sighted the home-signal we were running at about 25 miles an hour, and my fireman, as usual, put on the hand-brake, so as to reduce speed to five miles an hour, the regulated speed at the junction. I do not think we were running at more than that speed, as I was prepared to stop at the platform by the use of the hand-brake only. I did not apply any more steam after passing the junction, but just let the train run on, with the speed gradually reducing. The hand-brake was not hard on, but sufficiently to stop the train nicely at the proper place, about 10 yards short of the buffer-stop. Just after passing the station stop-signal for No. 3 road, I saw an unusual darkness just through the bridge. There was an engine blowing off on No. 1 line, which made it rather more difficult to see. I applied the vacuum-brake at once full power, blowing up to about 15 inches of vacuum, I should think, and I also reversed my engine, and applied back steam. I was running at about three miles an hour when I applied the brake and had nearly come to a stand when I struck an empty train which was on No. 3 line. I would have stopped altogether in a further distance of about two coach lengths. It was dark. Neither I nor my mate was hurt. No vehicles left the rails. I was running chimney first.

Thomas Tewrall states: I have been in the service of the Metropolitan Railway Company for about seven years, and a fireman for about four years. On the 31st January I was fireman with driver Cole. I have heard my driver's evidence read over and it is correct.

William Copplestone states: I have been about 30 years in the service of the Metropolitan Railway Company, and a guard for about 27 years. On the 31st January I came on duty at 2.30 p.m., to work till midnight. I actually booked off at 12.10. I had booked off at the same time that early morning. I was guard of the 5.43 p.m. down train from Aldgate to Richmond, which was made up as follows:—Tank-engine, third-class brake, two third-class, two composites, and second-class brake, in which I was riding. We started at right time, and left Kew Gardens at 6.34 or 6.35, right time. The train approached Richmond in the usual way, and at the usual speed, all the signals being off for us to enter No. 3 line. I felt the brake suddenly applied, and immediately after that the collision occurred. I should think my speed at the time was four or five miles an hour. My hand-brake was not applied, as the train was well under control, and would have easily stopped at the proper place. There were 20 or 30 passengers. None complained to me of injury. I was not hurt. There was a slight rebound.

William Miles states: I have been six months in the service of the Metropolitan Railway Company as a porter, and occasionally act as under-guard. On the 31st January I came on duty at the same time as guard Copplestone to work the same hours, and I had been with him on the previous day. I was in the front-brake compartment, and had no warning of anything being amiss until I felt a sudden application of the vacuum-brake, just before the collision. My hand-brake was not on. I was not hurt. Guard Copplestone's evidence is correct.

Robert George states: I have been just over 10 years in the service of the London and South-

Western Railway Company as porter, all the time at Richmond. On the 31st January I came on duty at 2 p.m. to work till 12.45. I had been on the same duty the previous day. I was working in the new station. Part of my duty was the uncoupling of engines of arriving trains, lighting signal-lamps all round the station, and attending to trains on arrival and departure, also changing tail-lamps on London and South-Western trains. The London and South-Western train from Ludgate Hill, due in at 6.27 p.m., arrived on No. 3 platform line at about right time. I uncoupled the engine, which crossed on to No. 2 line, and went forward to get round the train. After uncoupling the engine I went away to the outer end of the platform, and gave the usual bell-signal to the signal-cabin to let the signalman know that the line was clear for the engine to run round. After doing this I took off the tail-lamps, and brought them back to the other end of the train to get it ready to go out again. I also brought a parcel which I picked up off the platform. I put the tail-lamps on at the other end, and gave the parcel to one of the other porters to take to the parcels office. I was near the buffer-stops when the collision took place. I do not think the train was driven back for above a few feet. The automatic brake was on this train. I did not know that the engine was going away to the coal stage. Five times out of six it just takes water, and then comes back on to its train, which is due to start again at 7 p.m. If I had known that the carriages were going to stand without the protection of the lights on the engine I would not have removed the tail-lamps. The train had oil lamps, which were lighted. There was no light in the guard's brake-compartment, which was next to the incoming train. No vehicle left the rails. There were eight carriages in the London and South-Western train. There was an engine standing at the head of the 6.45 up London and South-Western train on No. 1 line.

John Morris states: I have been 33 years in the service, and a signalman for 28 years; at Richmond for 16 years. On the 31st January I came on duty at 2 p.m. for eight hours, having been on the same duty on the previous day. We work absolute block in both directions on the main line, and outwards on the branch, but not into the new station. It is, however, against the rules to allow a train to enter one of the platform lines, unless that line is clear. If there were one or two vehicles on a line, we might let a train in after cautioning it, but this hardly ever happens. There is a control from a ground frame in regard to Nos. 5 and 6 lines, but none in regard to Nos. 1, 2, 3, and 4 lines. There is a bell communication from the platform to indicate what trains are ready to start, and also to indicate when the line is clear for an engine coming from No. 3 road through No. 2 road to run round its train, that is when the tail of a train on No. 3 line is not fouling the crossing from No. 2 road. We book all trains. The 5.27 p.m. down train from Ludgate was given "on line" to me from Kew Gardens at 6.27, and arrived at 6.30, three minutes late. It ran into No. 3 platform line. The engine came out past No. 25 points from No. 2 line, and came forward to the signal-box. When engines come out so far we know that they wish to go to the turntable-road, either to turn or to get coal, so I put this engine into this road. That would be at about 6.35 p.m. I had cleared back to Kew Gardens at 6.30 At 6.37 I got the departure signal from Kew Gardens for the 5.43 down Metropolitan train from Aldgate, due at 6.38. I set the road for No. 3 line, and lowered my signals for this line, viz., No. 2, the distant-signal, No. 7, the junction-signal, and No. 9, the station stop-signal for No. 3 line. I quite forgot that the London and South-Western empty train was standing on that line. There is a bad view of this line from my cabin, owing to the obstruction caused by the pier of a bridge, and I would not say that I would have seen the tail-lamps in that train, even if they had not been removed. That would depend upon the distance which the carriages had been pushed out before the engine ran round. No. 1 and No. 4 lines were occupied, but I might have put the train into No. 5 or No. 6. That train often does go into No. 5. It was a dark night. There was nothing unusual in the speed at which the Aldgate train ran in. It was well under control. I have nothing to keep me in mind of the condition of the different platform lines, except that I book the entrance of each train, and I have metal tablets to put on to the signal-lever, applying to a line which is blocked. I usually put on the tablet as soon as a train has run in, and I have placed the signal to danger behind it, but on this occasion I forgot to do so. I think the tablets are an assistance, but I was misled on this occasion, and seeing no tablet on No. 9 lever. I pulled the lever over. I had tablets on No. 8 lever for No. 1 line, and No. 10 lever for No. 4 line.

Conclusion.

This slight collision was principally due to a blunder of signalman John Morris, who had at the time been on duty for about 4½ hours, and who honestly admits that he is responsible for it, but it would probably have been averted if porter Robert George, who had been on duty for the same time as the signalman, had not removed the tail lamps from the London and South-Western train sooner than he ought to have done.

This train, which had arrived at 6.30 p.m., was, after being emptied, pushed out nearly to the end of the platform, so that the engine might run round it, preparatory to starting back again at 7 p.m., and porter George, thinking that the engine was simply going to the water column, and then at once to the head of the train as it usually does, removed the tail lamps and took them back to the other end of the train. The engine, however, had to go to the turntable road to get coal, and therefore the empty carriages were standing without any light on the outer end of them. The signalman, who is provided with some metal tablets to put on to the handles of the signal-levers referring to the different platform levers, which he uses when a line is occupied, omitted to put the tablet on No. 9 signal-lever, after the London and South-Western train had run into No. 3 line, was therefore misled when he received the "On line" signal for the metropolitan train, and in a moment of forgetfulness set the road and pulled off the signal for No. 3 line, although this line was then occupied by the London and South-Western empty carriage train.

He is an old and experienced signalman of very good character, and it is surprising that he should have made such a mistake, seeing that so short a time had elapsed since the arrival of the London and South-Western train.

The driver of the metropolitan train was coming in quite slowly, and was evidently keeping a good look out, for, in spite of the darkness beneath the bridge, he caught sight of the empty train 30 or 40 yards off, but had not quite distance enough to stop his train in. If the tail-lights had been on the empty train, the signalman would probably, and the driver would almost certainly, have seen them, and it may be assumed that in either case no collision would have occurred.

The signalman considers that the tablets referred to above are an assistance to him, but in my opinion, something much more is required than an appliance of this kind, which, when forgotten to be used, as in this case, may be really an element of danger by inducing a false sense of security.

The view of the platforms from the signal-cabin is so bad that, unless a new cabin be erected nearer to the station, it is necessary that there should be some control from the station over the entry of trains, either by means of a ground frame, or better still by the placing of treadles or bars on the several lines, and interlocking the signals with them. The whole of the signal arrangements, however, at this station require revision, some of the signals being obsolete in pattern, some of them being wrongly placed, and several sets of facing-points being without the proper safety appliances, having neither locking-bar nor facing-point bolt.

I trust that the Company will lose no time in doing what is necessary to put this station into a satisfactory condition.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

F. A. Marindin.
Major, R.E.

APPENDIX.

Damages to Rolling-Stock.

Metropolitan Train.

Buffer compensator beams on four carriages, and three buffer-castings, broken.

Engine right-hand leading buffer-casting broken.

London and South-Western Train.

No. 512, third-class brake.—Buffer-castings and vacuum-pipe broken; end side panel damaged; axle guard strained; five quarter-lights and two end lights broken; cant-rail split.

No. 65, third-class.—Headstock and quarter-light broken.

No. 245, second-class.—Roof-cornice damaged; buffer knocked up; and body shifted.

No. 192, first-class.—Quarter-light broken.

No. 173, first-class.—Body shifted; sole-bar split; two quarter-lights broken.

No. 244, second-class.—Body shifted, buffers knocked up, and end bending damaged.

No. 203, third-class brake.—Quarter-light damaged.

Printed copies of the above Report were sent to the London and South-Western and Metropolitan Railway Companies on the 24th February.

LONDON BRIGHTON AND SOUTH COAST RAILWAY.

Board of Trade, (Railway Department,)
21st April 1893.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 24th ultimo, the result of my enquiry into the circumstances connected with the accident which occurred on the 20th ultimo between South Croydon and East Croydon stations on the main line of the London, Brighton and South Coast Railway.

In this case as the 8.40 a.m. relief up express train (running on Monday mornings in advance of the 8.45 a.m. up express train) from Brighton for London Bridge was approaching South Croydon station, the off-leading wheel of the trailing bogie of the Pullman car "Jupiter," the seventh vehicle from the engine began to break up, soon after which the near leading-wheel of the same bogie left the rails and ran along in the 4-ft. space at a varying distance of from one to two feet from the near rail, till it reached a siding connection near East Croydon station, when the trailing-wheels of the bogie were also thrown off the rails; soon after this the train was stopped, by the application of the brakes, with the engine of the train close to the south end of East Croydon station, the trailing end of the car "Jupiter" being still supported on the damaged bogie, the only part of the off leading-wheel remaining being its boss.

Two passengers complained of being shaken.

The train consisted of engine, tender, brake-van, three six-wheeled first-class carriages, two eight-wheeled bogie-carriages, two Pullman cars, (Jupiter and Maude), three eight-wheeled bogie-carriages and a brake-van, 12 vehicles in all (counting as 19), coupled in the order stated. The train was fitted throughout with the Westinghouse automatic-brake, its total weight unloaded being about 260 tons, of which about 236 tons were on braked wheels.

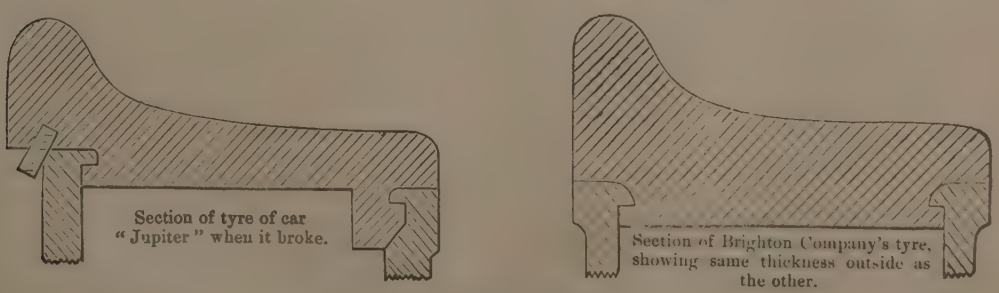
The Pullman car "Jupiter" was the only vehicle damaged, a list of the damage being given in an appendix.

In the permanent-way 53 chairs were broken, and one gauge-tie, two point-rods and one switch were bent.

Description.

The line between South and East Croydon stations (which are nearly a mile apart) is straight and nearly level. The junction of the Oxted and main lines occurs at the south end of South Croydon station, there being a cross-over road a short distance to the north of the junction. The first marks of anything being wrong were visible near the up end of this cross-over road, where three chairs were marked on the outside of the off rail, and three opposite chairs were broken on the near rail; the next mark was on the sleeper next but one to that under the northernmost of the three broken chairs, and about one foot from the inside of the near rail; the heel chair of the west switch of the cross-over road was then broken, after which a track was visible in the 4-ft. space at a distance varying from one to two feet from the near rail, (caused probably by the near leading wheel of the rear bogie), with occasional corresponding marks outside the off rail, as far as the connection of a siding with the up line near East Croydon station, when the marks became more numerous from the trailing-wheels of the bogie having probably then left the rails; shortly after this the train stopped, the distance run by the derailed wheels having been 1,540 yards. The first portion of the broken wheel picked up was a piece of the flange about 6 inches long in the 6-ft. space nearly half-a-mile south of South Croydon station, there being a piece of a broken brake-block close to it. Four other pieces of the wheel (the largest about 12 inches long, also part of the flange) were found between the first piece and South Croydon Station. Other pieces, mostly small, were picked up between South Croydon and where the train stopped; among these, about half-a-mile from South Croydon, was an axle box, which after breaking a chair on the near rail of the down line was thrown down to the bottom of an embankment on the east or down side of the line.

The tyre which gave way, and allowed the wheel to break up, was supplied to the Brighton Railway Company with the car "Jupiter," which they purchased from the Midland Railway Company some years since. The tyre was fastened to a wooden wheel in the usual manner, with an iron ring on each side fitted into grooves cut in each face of the tyre, the rings being bolted together by bolts passing through the wood work of the wheel. The wheels of the car were all in the shops for repairs in December last, and the wheel examiner, being unaware that the tyres were of a different section from those in general use by the Brighton Company, had them turned up, believing that there was still a thickness of $1\frac{3}{16}$ inches of metal left on the tread of the tyre, the practice being to turn up no carriage tyres unless the tread would be left at least an inch thick after the operation. As was, however, discovered after the fracture of the tyre, the thickness of its tread was found to be only about $\frac{5}{8}$ of an inch, and the cause of the mistake made by the wheel examiner will at once be made evident by comparing the accompanying section of the tyres of the car "Jupiter" with that of those in use on his own railway.


Section of tyre of car "Jupiter" when it broke.
Section of Brighton Company's tyre, showing same thickness outside as the other.

Scale, half full size.

Seeing about $\frac{1}{16}$ of an inch of metal showing on the outside of the car tyre, and knowing that this would mean with a Brighton Company's tyre an additional thickness of half an inch on the tread, and not suspecting any difference in the form of the car tyre, he thought himself fully justified in allowing the car tyres to continue running.

In addition to the excessive thinness of the tyre which broke, there were also internal flaws, not visible on the exposed surface of the tyre, which rendered it weaker than it would otherwise have been.

Evidence.

1. *John Philpott*, signalman, 19 years' service, 14 years signalman.—I have been employed at South Croydon all my time, and I came on duty there on Monday, the 20th instant, at 6 a.m. for eight hours. I have a booking-boy with me in the cabin. The first signal I received for the 8.40 a.m. up train from Purley intermediate cabin, about one mile off, was the warning-signal at 9.33 a.m. I was able to accept the train, signalled it on to East Croydon south cabin, and on receiving "Clear" I lowered my signals. I received the "On line" signal at 9.35 a.m., and it passed at 9.36 a.m. at a speed of 58 or 60 miles an hour, the usual speed of an express. I watched the train as it was passing, and I heard a noise as of iron rattling, and on looking out I saw when the train was between the platforms some wood flying out, apparently from the rear part of the first Pullman car, and dust flying. I saw no wheels off the rails, and a down Oxted train passing at the time prevented my seeing anything more. On seeing the wood flying just after I had given the train on to East Croydon I gave the signal "Stop and examine train," nine beats with no pause. East Croydon had acknowledged the "On line" signal before I gave the nine beats; this signal he did not acknowledge, but he replied to a message on the speaking instrument which I had told the booking-boy to send, and therefore I did not repeat the nine beats. I then got a message on the speaking instrument that said that part of the train was off the road. Shortly after the accident the booking-boy picked up a piece of a wheel and I told him to give it to the station-master; this was picked up south of the cross-over road.

2. *Frederic Pugh*, signalman, 20 years' service; nine years signalman.—I have been $3\frac{1}{4}$ years in the East Croydon south cabin, where I came on duty at 6 a.m. on the 20th March, to remain till 2 p.m. The first signal I received for the 8.40 a.m. up train was the "Be ready" at 9.34 a.m. I accepted the signal and gave it on to the north box signalman who pulled off the slots. I received the "On line" signal at 9.37 a.m., and "Line clear" for the down Oxted train at 9.37 a.m., I then in about half-a-minute received nine beats for "Stop and examine train," but before this I had noticed something wrong with the train as it was approaching, and I was prepared consequently for the signal, which I did not acknowledge for want of time. The train was at this time so close that I thought it useless to throw up my home-signal, but instead, I showed a red flag when the engine was about 400 yards off approaching as usual. The train then began to pull up and stopped with the damaged car about opposite my cabin. When the train stopped, the car "Jupiter" was standing with its damaged end foul of the down line, and the front end close to the signal-cabin. I received a message on the speaking instrument from South Croydon, which was finished about the time the train stopped, the message was "Something wrong with the train, you had better stop it." I saw no pieces of the wheel picked up. The train stopped at 9.38 a.m.

3. *Henry Harman*, driver, 33 years' service, 23 years driver.—I commenced work on March 20th at 7.55 a.m. for a spell of about seven or eight hours. I was driving engine No. 219, six-wheeled engine, four wheels coupled in front, and a six-wheeled tender; the train consisted of 12 vehicles, counting as 19, viz., brake-van at each end, three first-class, two bogie-carriages, two Pullman cars, and three bogie-carriages. The Westinghouse brake was fitted throughout the train. We left Brighton at 8.40 a.m. right time, the first stop being London Bridge. We were checked at Red Hill and stopped at Merstham. The signals were then all off as far as East Croydon, and I passed South Croydon at a speed of 50 miles an hour, and the communication bell began ringing about the platforms at South Croydon. I first thought the guard was ringing for the slip which takes place with the 8.45 train, but as the bell kept on ringing I applied the brake gently, my mate looking back on the 6-ft. side and telling me he saw dust coming from the Pullman car. On hearing this I applied the brake a little harder, desiring to pull the train up at East Croydon platform; directly after the fireman looked back, I did also on the left side, but saw the coaches all in line. The fireman continued to look back and to see dust flying, and as the bell continued ringing, I applied more air up to 40 lbs. and I think I had almost brought the train to a stand when the brake-tap was opened, I believe, in the front van and the train then stopped with the engine about the south end of the platform and the Pullman car opposite the signal-cabin. I did not go back as far as the "Jupiter," which was not much out of a level and was somewhat askew, but not, as I thought, foul of the down line. I saw no red flag from East Croydon south cabin, but there might have been one without my seeing it.

4. *Harry Killick*, fireman; $13\frac{1}{2}$ years' service, 12 years fireman.—I am Harman's regular fireman, and have been with him about 18 months. I agree with his evidence. I saw just before we stopped that the rear end of the car "Jupiter" was projecting into the 6-ft. space.

5. *Willlam Groves*, guard, 20 years' service, 12 years guard.—I was head guard of the 8.40 a.m. relief-train from Brighton for London Bridge on March 20th. I was riding in the front van and in it was the traffic inspector. There were 12 vehicles, counting as 19. We started to time. We were stopped at Merstham for two minutes, and then found all signals off. The alarm-bell began ringing just north of South Croydon station when the speed was from 50 to 55 miles an hour. I looked out at the near side and saw nothing, and then again when close to East Croydon station, and then I saw ballast flying, but the cars all in line, the inspector putting the brake on at the same time, before which the driver had checked the train. The train was then stopped with about the centre of it opposite the cabin. I went back and found the car "Jupiter" nearly level, but skew across the rails with the rear end of the bogie foul of the down line so as to prevent a train passing. No couplings had given way. I heard no complaints of injury. The front part of the train, consisting of six vehicles, was then taken on to London. The train stopped at 9.37, two minutes late. I signed on duty at 8.15 a.m. and off at 6 p.m.

6. *William Phipps*, guard, 10 years' service, seven years guard.—I was under-guard of the 8.40 a.m train on the 20th March, riding in the rear

brake-van where I was alone. The train was first stopped by signal at Merstham. After this nothing occurred till I heard the bell ringing on passing South Croydon station. I looked out on both sides and saw dust flying on both sides from about the centre of the train. I could feel the brake being applied soon after the bell began to ring, and afterwards it was used more forcibly, the train being stopped about opposite the signal-cabin. I had looked out again on the near side shortly before the train stopped, and still saw nothing out of line. I saw no red flag from East Croydon south cabin. The rear part of the car "Jupiter" was resting on the bogie, the front right wheel of which was completely broken up. My hours of duty were 8.10 a.m. to 12.5 p.m. These hours are on Mondays only, when I have 2½ hours to spare in the afternoon.

7. *George Hartoverne*, conductor, 12 years' service, eight years conductor.—On 20th March I was in charge of the Pullman Car "Maude" which was next in rear of the car "Jupiter" on the 8.40 a.m. train from Brighton. The journey went all right up to near South Croydon. About 100 yards before reaching the station, stones began to fly from the rear of car "Jupiter" against the front of car "Maude." Thinking the bogie was off the rails I at once rang the communicating bell and it continued ringing till the train stopped, gradually very near East Croydon south cabin. The body of the car "Jupiter" was partly over the 6-ft. space. I heard no one complain of being hurt.

8. *William Paddobin*, conductor, 14 years' service, 2½ years conductor.—I was in charge of car "Jupiter" on 20th March, leaving Brighton at 8.40 a.m. There were 16 passengers. I felt nothing wrong until between South and East Croydon stations, and then feeling some sharp bumps, I opened the door at the front end of the car and looked back along the left side, and just as I did so the train stopped. Before the train stopped no one had complained to me of the car travelling uneasily. No one complained of being hurt. Nothing had come through the floor of the car. There were no couplings broken.

9. *George Barnes*, ganger, 28 years' service, ganger 20 years, on the length from East Croydon south signal-cabin to 50 yards north of the South Croydon up distant-signal, about 1¼ miles.—On the day of the accident after putting the road right I searched for pieces of the broken wheel, and the first piece I picked up was close to the South Croydon up distant-signal in the 6-ft. space, and a piece of a brake block close by it. It was about six inches long, and I believe part of the tread of the flange. The next piece was on the outside of the down line, this was about 12 inches long, I think a piece of the flange. Another small piece was picked up between the bridge and South Croydon station, and one or two other small pieces. Several small pieces of different parts of the wheel, wood and iron, were picked up between South Croydon and where the train stopped. An axle-box, which broke a chair on the near rail of the down line, close to the 11th mile post, quarter of a mile from East Croydon, was picked up on the bottom of the bank. I had to replace 30 chairs, no rails and no sleepers in my length. I was working near the 11th mile post, and my gang tried to stop the train with holding up their arms.

10. *William Thomvson*, ganger, 23 years' service, 19 years ganger, seven years over the length between 9¼ and 10¾ miles.—The train stopped in my length. All the wheels of the rear bogie of the "Jupiter" were off the rails. I could not say where the trailing-wheels left the rails, but probably at the crossing near the signal-cabin. I had to replace 23 chairs, no rails and no sleepers; one gauge-tie, two point-rods, one point-tongue were bent.

11. *Henry Batchelor*, carriage examiner, 24 years' service, 3½ years carriage examiner.—I examined the wheels of the car "Jupiter" at Brighton when it arrived from London at 10.55 p.m. on Sunday, 19th March. I examined the wheels by tapping and with a lamp, and found nothing wrong with any of them. I have on some occasions found loose tyres by tapping.

12. *William Virgo*, carriage examiner, 15 years' service, 10 years carriage examiner.—I examined the car "Jupiter" at Brighton about 7 a.m. on the 20th March, when it was on a spare siding waiting to be taken into the station. I tapped all eight wheels and looked round the tyres, and I neither saw nor heard anything wrong with the tyres. I have detected loose tyres by tapping, but never flaws.

13. *Charles Harrington*, wheel examiner in the Brighton shops.—All the wheels of car "Jupiter" were in the shops in December. The tyres were turned up and were all equally worn as far as could be seen. The broken tyre and its fellow left the shops with, as I thought, a thickness of $1\frac{3}{16}$ inches of metal, the other tyres being $1\frac{7}{16}$ inch thick as I thought. I now find that, not having been aware of the construction of the tyres, which were made at Derby and supplied with the Pullman car "Jupiter," their thickness was really only about ⅝ or ¾-inch. Had I known this I should have condemned the tyres, as the rule is not to turn out carriage wheels less than one inch thick. I think the cause of fracture was the thinness of the tyre and a flaw not visible from the exterior. I had been under the impression that the retaining ring of the "Jupiter" wheels was the same as ours.

Conclusion.

This accident was no doubt due to the fracture of the right leading tyre of the rear bogie of the Pullman car "Jupiter" as it was approaching South Croydon station at a speed of between 50 and 60 miles an hour. The cause of fracture was the exceeding thinness of the tyre, combined with a flaw not visible from the outside. The first person to realise that anything was wrong was Hartoverne, the conductor of the Pullman car "Maude," which was next to and in rear of the car "Jupiter." Just before reaching South Croydon station he noticed that stones were flying from the rear of the car "Jupiter" against the front of his car. He at once rang the electric communication bell, and kept it ringing till the train stopped. The ringing of the bell was heard by the driver, fireman, and both guards of the train on passing South Croydon station; the driver at first thought the bell had, through a mistake of the guard, reference to the slip which takes place with the 8.45 a.m. train; but on the bell continuing to ring, and his fireman telling him he saw dust flying from the neighbourhood of the Pullman cars, he applied his brake intending at first to stop at East Croydon platform; and then, as the bell still continued to ring and the dust to fly, he used his brake more

forcibly, and just as he had done so it was applied also from one of the vans, the train being stopped with the engine at the south end of East Croydon station, after having run nearly a mile from the first mark of derailment, the car "Jupiter" being askew to the line, with its trailing end resting on the damaged bogie and foul of the down line.

The conductor of the "Jupiter," who was in the front of the car, did not become aware of the accident till just before the train stopped.

The guards had felt the train being checked by the brakes directly after the bell began ringing, the traffic inspector, who was riding in the front van, applying the brake in that van (on the guard seeing the ballast flying) when closely approaching East Croydon station.

Philpott, the signalman at South Croydon, hearing an unusual rattling and seeing pieces of wood and dust flying just after the train had passed his cabin, very properly sent the signal "Stop and examine train" to Pugh, the signalman in the East Croydon south cabin, following it up with a message on the speaking instrument to the same effect.

Pugh acknowledges receiving the signal, but said he had not time to acknowledge it. Before receiving it he states that he had noticed something with the train as it approached. Instead of putting up his home-signal to stop it he showed a red flag, thinking it would be more effective than the home-signal, when the train was about 400 yards off. No one, however, appears to have seen the red flag, and Pugh would certainly have acted more judiciously had he put his home-signal and shown his red flag in addition.

The wheels of the car had been examined both on the previous evening on its arrival from London and also in the morning before it started, and nothing was seen amiss with them.

I have above stated the reason why the car "Jupiter" was permitted to run with the tyres of two of its bogie wheels so much thinner than allowed by the Brighton Company's regulations, viz., because the wheel-examiner was misled by the fact that these tyres, which had been purchased with the car from the Midland Railway Company, were of a different construction from Brighton Company's tyres, as if the latter had shown the same thickness as these on the outside, viz., about five-eighths of an inch, the tread would have been $1\frac{1}{8}$ inches thick, whereas in these tyres the thickness of the tread remained five-eighths of an inch all through. It is easy after the event to say that the wheel-examiner should not have taken such a fact for granted, but for my own part it was, I think, a natural mistake to make, and one for which he can hardly be held to be very blameworthy.

The locomotive superintendent informs me that there is only one other car with wheels and tyres similar to these, and that he is having all these replaced with those of the ordinary construction.

I have, &c.,

C. S. Hutchinson,

Major-General, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

The Damage done to the Bogie of Car "Jupiter."

Timber soles, headstocks, cross-bearer, bolsters, swing-beams, axle-guards, braces, and brake-beams; all to be renewed.

Iron sole-plates, headstock-plates, bolster-plates, horn block-plates, cross-ties, safety-straps, swing-beam, axles, horn-blocks, axle-boxes, spiral springs, elliptic springs, and equalising bars require renewing and re-setting.

One axle bent and four steps of car broken. Westinghouse pipes to be renewed.

Printed copies of the above Report were sent to the Company on the 10th May.

METROPOLITAN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
31st January 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 25th instant, the result of my enquiry into the circumstances attending the collision which occurred on the 20th instant at Baker Street terminal station, on the St. John's Wood branch of the Metropolitan Railway.

In this case the 8.16 a.m. up passenger train from Aylesbury (consisting of tank-engine, running bunker in front, and five eight-wheeled carriages, of which the first and last were brake-carriages), when entering No. 3 dock-line at about 9.37 a.m. over-ran the proper stopping place, and came into collision with the platform at the end of the dock.

The platform was damaged, one of the girders carrying the steps of the lower flight of the stairs of a footbridge was broken, and the other one was bent, the steps being forced back for a distance of about four feet.

Thirty-one passengers have complained of injury, but it is stated that no one was seriously hurt. Both the guards of the train were also slightly injured.

No vehicle left the rails, and the damages to the rolling-stock were trifling.

The train was fitted throughout with the simple vacuum-brake, working blocks on the four coupled wheels of the engine, and on 28 wheels out of 40 on the carriages.

Description.

At Baker Street terminal station there are three platforms, and three platform lines of which No. 3 is on the west, or the proper up side.

There are no buffer-stops at the end of the line, where the work of putting in a sector table for Nos. 2 and 3 lines is in progress.

The staircase which was damaged was close to the end of the line, and the following distances outwards from this point should be noted :—

	Yards.
To usual stopping place of engine - - - - -	12
„ point where the driver made the final application of his brake, between the 2nd and 3rd lamp posts - - - -	20½
„ outer end of platform - - - - - -	89
„ signal-cabin - - - - - - -	128
„ mouth of tunnel - - - - - - -	193
„ home-signals inside tunnel - - - - -	330

St. John's Wood Road station is 55 chains from Baker Street, and Marlborough Road station is about 46 chains from St. John's Wood Road station. Between Marlborough Road and St. John's Wood the line is for a distance of 33 chains on a falling gradient of 1 in 60, the gradient changing to a falling gradient of 1 in 300 through the station.

The following are the gradients for the last 50 chains from the canal bridge into Baker Street, viz.,—falling 1 in 44 for 14 chains, falling 1 in 90 for 22 chains, and falling 1 in 250 for the remainder of the distance to the end of No. 3 line.

The platform lines are on a nine-chain curve to the left.

The line is worked on the absolute block system, with Spagnoletti's lock and block instruments, and treadles.

The total length of the train was about 80 yards.

The following is an extract from the instructions for working the vacuum-brake, dated May 1889 :—

VI. In approaching all terminal stations, viz., New Cross, Aldgate, Moorgate (North Dock), Baker Street East, Hammersmith, and Richmond, the train must be completely under control before the engine reaches the platform, so that a careful stop may be made by the hand-brake of the engine only; and the guard must be prepared to assist with hand-brakes if required. Should it be necessary for the drivers to use the vacuum-brake, a special report must be made detailing the circumstances.

Revised instructions, dated 31st August 1892, for working the automatic vacuum-brake contain a clause to the same effect, although somewhat differently worded, referring to all terminal stations.

Evidence.

Charles Mathews states: I have been about 15 years in the service, about 14 years a signalman, and about 7½ years in Baker Street north box. There are now, since the alterations, 47 working levers and two block instruments in the box. Absolute block working is in force. On the 20th January I came on duty at 5 a.m. to work till 1 p.m., having had the same duty the day before. The following is the record for the 8.16 a.m. up train from Aylesbury, due at 9.36 a.m.:—Accepted at 9.34 a.m., immediately the preceding train was clear into the station; arrived at 9.37. We do not book any signals received, but only the time of arrival. After 9.34 I crossed an engine from No. 1 road to the water siding on the up side, and during that operation my signals were locked at danger. As soon as this operation was completed I took off No. 49, the up home-signal for No. 3 road, the usual road for this train to enter, and No. 50, the up distant-signal. I think that the train must have been inside the distant-signal before I lowered it. The home-signal is in the tunnel, and therefore I cannot say whether or not the train came nearly or quite to a stand at it. When it passed my cabin it was running at the usual speed with steam off. I did not think the speed was more than five miles an hour. I did not notice whether or not the brakes were on. As far as I could see the men on the engine were attending to the brakes when passing the box. I did not hear any whistling after the train had passed, and I was not apprehensive of any accident happening. I had put my signals to danger, and was preparing to let an engine out of the siding when I heard the crash of the collision. It was rather a misty morning, but I could see about half-way down the station. I should think the rails must have been a bit greasy. I accepted this train, in accordance with rules, from St. John's Wood Road, and I was unable to do so, or to take my electric lock off the St. John's Wood starting-signal until the preceding train had passed over one of the treadles. It was not a breach of the rules for me to let an engine cross, and foul the road between my box and the home-signal after the train had been accepted and had left St. John's Wood. I got a "Train entering section" signal from St. John's Wood but did not book it, and it was after receiving this signal that I put the engine across, about 200 yards inside the home-signal. I did not see steam applied on the engine after the train passed me, nor did I hear the brake applied.

Duncan White states: I have been about 14½ years in the service, about three years a driver, and for the last six months driving on the St. John's Wood branch. I am well acquainted with the line, and with the signals at Baker Street since the alterations. On the 20th January I came on duty at Neasden at 5.50 a.m., to work till 1.45 p.m. I left duty the day before at about 3 p.m. after about eight hours duty. My engine (No. 1) is an eight-wheeled engine, with leading bogie, and driving and trailing wheels coupled. It was fitted with the vacuum-brake, which can be worked either as an automatic brake, or as a simple brake. I left Neasden at 6.25 with a train for Aylesbury, arriving there at 7.33, and started back with the same train at 8.16. There were five long coaches fitted with the simple vacuum-brake. The apparatus on the engine was properly set for working the simple vacuum-brake. I used it at all the stops, both on the down and the up journey, and it acted well. Everything went right on the up journey until our arrival at Baker Street. The last stop was at Harrow. We were stopped at the home-signal at Marlborough Road, but the signal was lowered immediately after I had stopped. The signals were right at St. John's Wood Road, but the up distant-signal for Baker Street was at danger. Steam had been shut off as usual soon after leaving Marlborough Road. When I saw the Baker Street up distant-signal first I did not think my speed was over five or seven miles an hour. I maintained that speed past the distant-signal. After leaving Marlborough Road I had to be prepared to stop at St. John's Wood Road, so I came cautiously, until I could see that the St. John's Wood Road signal was off, and then I let the train run on. I did not apply my brake at all after leaving Marlborough Road until after I passed the Baker Street up distant-signal. I put the brake on just after coming out of the single line tunnel, at which time I think the speed of the train was not above five or six miles an hour. I blew up the vacuum to 15 inches. My hand-brake had been applied by the fireman soon after we passed Marlborough Road. It was not hard on, but was rubbing. I did not see the home-signal, owing to the tunnel being full of steam, until I was within 8 or 10 yards of it, and then I was nearly at a stand. The home-signal for No. 3 line, the usual line for this train, was off, so I released the brake, and applied a little steam. I opened the regulator, and kept it open until we had passed the signal-box, when I shut it again. I had 120 lbs. steam at the time. I came out of the tunnel at a speed of three or four miles an hour, and passed the signal-box at about the same speed. Just before reaching the signal-box I applied the vacuum-brake, with a vacuum of 15 ins., which I kept up, and at the same time my fireman spun round his brake wheel. About 14 yards after passing the end of the platform, finding that I was going to stop too soon, I released the brake, destroying nearly the whole of the vacuum, and when between the second and third lamps from the end of the line I applied it again to stop, using again about 15 inches of vacuum. The engine-wheels skidded, and I came into collision with the platform end, and the staircase beyond it. I had very nearly stopped at the time. I remained on the engine and so did my mate. We were not hurt. My engine was not much damaged. As soon as the wheels began to skid, I spoke to my mate and he opened the sand-valves. I reversed my engine, but had no time to apply back steam. I think the accident was due to some clay being on the rails, and making them greasy. I have had a copy of the instructions for working the continuous-brake. I know that at terminal stations it is the rule that the train is to be stopped by the hand-brakes only, but I have been in the habit of using the vacuum-brake as well when entering Baker Street station. I have not in such cases made "a special report, detailing the circumstances," nor have I been checked for using the vacuum-brake. I have not seen any special caution posted up at Neasden as to the use of the continuous-brake at terminal stations since this collision occurred. I have not been on duty since. The usual place to stop is five or six yards short of the staircase, nearly opposite the gates. I felt no application of the guard's brake, and I believe it is not the practice of guards to apply their hand-brakes at the station.

Arthur Goodman states: I have been 5¾ years in the service, and a fireman for 1¾ years. On the 20th January, and also on the 19th January, I was firing with driver White. Both days I came on duty half an hour before my driver, but left duty at

the same time. I can corroborate my driver's evidence as far as I know. After we left Marlborough Road station I had my brake screwed down a little in readiness to apply it at the station, but the first time I put it hard on was to stop at Baker Street home-signal. When I saw the signal was off I released my hand-brake, and put it on again when passing the signal-box, and tight on after entering the platform line. I have seen a special notice posted at Neasden since the accident, and I had previously seen the instructions.

Albert Bonnick states: I have been 10 years and 4 months in the service and 5 years a guard, and accustomed to work on the St. John's Wood branch for four years. On the 20th instant I came on duty at 6.15 a.m. at Neasden to work till 3.9 p.m. I was working the same hours on the previous day. We left Aylesbury with the 8.16 a.m train, made up as follows:—Engine (running bunker first), one second-class, one composite, one first-class, and two third-class. There was a brake compartment in the front carriage and in the rear carriage, with a guard in each. I was in the rear carriage. They were eight-wheeled coaches. They were all fitted with the simple vacuum-brake, which worked properly on the journey up and down. Everything went all right on the up journey until we reached Baker Street. The last stop was at Harrow. We left Harrow at right time, 9.18. We were checked at Marlborough Road up home-signal, and came nearly but not quite to a stand. I think our speed was about 20 miles an hour after leaving Marlborough Road. We came on from there to Baker Street up home-signal, where we came nearly to a stand. After starting from there again my brake was not applied until the carriage in which I was riding was approaching the signal-box. I then thought the speed, which was about five miles an hour, was rather high for stopping, so I applied my brake. I gave it two or three turns. I thought the train was pulling up all right, so I released my brake just before the collision took place. The train came almost to a stand before the collision. I was in the act of releasing the brake, and was thrown against the brake-wheel. I have been off duty for two days in consequence. My brake was never hard on. I was quite taken by surprise by the collision, and did not think there was anything amiss until after I got out. It was a very light train. No passenger complained to me of injury. I work with different drivers into Baker Street. Most drivers use the vacuum-brake to stop with. As a rule I do not apply the hand-brake unless I think the driver is going too fast. There is a copy of the instructions for working the continuous brake put up in the guards' brake compartments.

John Keen states: I have been seven or eight months in the service, and have been acting as under guard for over six months. On the 20th instant I came on duty at 6.15 a.m. to work till 3 p.m. My hours on the previous day were the same. I was under-guard of the 8.16 a.m. train from Aylesbury, and I was riding in the front brake compartment. My brake was not applied at all that morning on entering Baker Street. I do not think our speed was over four miles an hour when coming through the yard, and we had slackened a trifle before the engine struck the staircase. When we were entering the station, I thought the driver had his train quite under control, so I turned round to light my tail-lamp, and I was doing so when the collision occurred. I did not think there was any necessity for me to apply may brake. I was stunned by the shock of the collision. I can feel when the vacuum-brake is applied. I felt the application about the signal-box. I did not feel it released or re-applied.

Charles Anderson states: I am a shunter, and have been 10 years in the service, most of the time at Baker Street. I came on duty at 5 a.m. on the 20th instant to work till 3 p.m. Those are my hours for one week, and from 3 p.m. till 1 a.m. the next week. I saw the Aylesbury train running in, and I crossed in front of it at the outer end of the platform. It was running slowly, at four or five miles an hour I should say. The brakes were on when the train passed me, and I was surprised when the collision took place. I was then on the platform opposite to about the middle of the train, and the speed was very slow. I had travelled about half-way along the platform after the train had passed me. After the engine passed me, I did not hear or see the brake released or re-applied. Drivers generally use the vacuum-brake to stop with at this station.

John Clayton states: I am locomotive inspector. I am always at Baker Street during the busy part of the day. Drivers entering Baker Street station sometimes use the vacuum-brake to stop with, and sometimes do not. If I see a driver using much vacuum I always check him, but I cannot say that if I see a driver coming quietly in, and using two or three inches of vacuum just at the end, I pay any attention to it. I know what are the instructions perfectly well, and that the drivers ought not to use the vacuum-brake at all. I have never made a written report, although occasionally, I have verbally reported that drivers have been coming in too fast. I have never received any special report from a driver as to the use of the vacuum-brake for stopping with.

Conclusion.

This collision was due to the driver of the 8.16 a.m. up train from Aylesbury having delayed too long the final application of his brake, in order to bring his train to a stand at the usual place on No. 3 platform line at Baker Street station.

He had been stopped, or nearly stopped, at the up home-signals, only 330 yards distant from the end of the line, and clearly had his train perfectly under control when entering the station, but, when about 65 yards from the proper stopping-place, which is some 12 yards short of the end of the line, he thought he was coming to a stand too soon, and therefore released his brake and let his train run slowly on for about 45 yards before re-applying the brake, which, owing to the rails being rather greasy, failed to stop the train in time. The speed of the train when it came into collision with the platform and staircase at the end of the line cannot have been more than two or three miles an hour, and, considering the speed, a greater amount of damage resulted than might have been expected.

This driver, Duncan White, had at the time been on duty for under four hours.

Neither of the guards applied their brakes, but according to the rules they are only called upon to do so if they consider it to be necessary, and both of them thought that

the driver had it in his power to stop as usual, while the driver did not call for their assistance by sounding his whistle.

The instructions for the working of the vacuum-brake prohibit the use of this brake at terminal stations, unless in an emergency, in which case a special report is to be made, but it is clear from the evidence that there has been considerable laxity in the observance of this excellent rule, and that many drivers have been in the habit of depending upon their vacuum-brake to stop with, and of using it for this purpose without being found fault with.

A rule or instruction which is not enforced becomes worse than useless, for it is not in human nature to continue to obey it if it is permitted to be infringed with impunity, and it is therefore satisfactory to learn that since this collision the Company has issued a special notice enjoining a stricter adherence to the instructions.

Under the mode of working on the Metropolitan Railway, and with the instruments in use, a signalman cannot, until a train has passed over a treadle fixed in advance of his home-signal, either give permission on his block instrument for a second train to leave the cabin in rear, or release his electric lock on the starting-signal at this cabin, which signal is therefore kept at danger.

This union of "lock and block" is a most valuable safeguard, but it ought to be carried out thoroughly, which is not quite the case at Baker Street, for, although at this station and throughout the system of the Metropolitan Railway Company, the collision of a train with a preceding running train is guarded against, it is apparent from the evidence that after a running train has passed forward and released the block instrument by means of the treadle, another train can be allowed to approach when the line has been fouled by an engine or train being let out of a siding, which is quite as dangerous as if a running train were stopped in the same position.

Baker Street is situated at the foot of a steep incline, and I consider that there is great risk in allowing any shunting operations to take place there after a train has been allowed to leave St. John's Wood Road, as was done upon this occasion, and I trust that steps may be taken to prevent any fouling of the main line when a train is approaching.

I have, &c.,
F. A. Marindin,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

P.S.—It will be seen from the following letter, received the day after my report was made, that the general manager has lost no time in giving instructions which, it may be hoped, will prevent any fouling of the up line after an up train has been allowed to leave St. John's Wood Road station:—

Metropolitan Railway.

General Manager's Office,
32, Westbourne Terrace, London, W.,
January 31st, 1893.

Dear Sir,

As elicited at the enquiry yesterday, I find that, without any authority, the signalmen at the yard box have, occasionally, during the prosecution of the works attending the alterations at Baker Street, permitted light engines, when shunting, to proceed on to the up line after an up train has been accepted from St. John's Wood Road station.

I have, therefore, given positive instructions for this practice to be discontinued.

Yours faithfully,
J. Bell.

Major Marindin, R.E., C.M.G.,
Board of Trade, Whitehall, S.W.

Printed copies of the above Report were sent to the Company on the 16th February.

NORTH BRITISH RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
21st January 1893.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 14th instant, the result of my enquiry into the circumstances attending a collision which occurred on the 5th instant at Possilpark station on the North British Railway.

In this case, as the 5.15 p.m. inner circle train from Maryhill was approaching Possilpark station at 6.5 p.m., it ran past the down home-signal, which was at danger, and came into collision with the leading waggon of a train of empty goods waggons, which were being pushed back along the down line into a siding.

Three of the empty waggons were thrown off and damaged, but no vehicle in the passenger train left the rails, and the only damage was to the engine.

Three passengers were injured.

The passenger train was made up as follows:—Tank-engine (running chimney first), one third-class brake-carriage, one third-class, two first-class, and one third-class carriages, and one third-class brake-carriage, and was fitted throughout with the Westinghouse brake.

The goods train at the time of the collision was made up as follows:—Eight empty waggons, engine and tender, four empty waggons, and brake-van.

Description.

Possilpark, a station on the Helensburgh branch of the North British Railway, a double line, is 50 chains north of Cowlairs north junction signal cabin, and it is situated upon a gradient of 1 in 100, falling northwards. The signal cabin is at the north end of the station, close to the junction of the Ruchill goods line, the junction having trailing-points on the up line, that is the line to Cowlairs junction. At the south end of the station there is a siding on the down side, with trailing points on the down line, and it was at the fouling point of this siding connection that the collision occurred.

The only signals to which it is necessary to refer are the down distant-signal, which is a lower arm on the post carrying the down advance starting-signal worked from Cowlairs north junction cabin, 868 yards south of Possilpark signal cabin, and the down home signal, which is on the proper side of the line, 260 yards south of the cabin, and 19 yards south of the point of collision. This latter signal can be first seen from the foot-plate of an engine approaching on the down line at a point 42 yards south of the down distant-signal, and continues visible for a distance of 416 yards, when, for a distance of 110 yards, it is hidden from view by a Caledonian Railway Company's bridge, now under construction, becoming again visible at a point 124 yards from the signal-post.

Coming from Cowlairs north junction the line is upon easy curves, first to the right, and then to the left, as far as the point of collision, whence it is straight through the station.

The gradients from Cowlairs north junction are as follows:—Rising 1 in 238 for 97 yards, falling 1 in 80 for 827 yards to the point of collision, and for 133 yards further, when it changes to a falling gradient of 1 in 100, which continues for 1,034 yards.

The line is worked upon the absolute block system, with the rules generally in use on the North British Railway, under one of which (the "Section clear, but station or junction blocked" clause) a train, having been stopped and cautioned, is allowed to proceed forward from any block-signal cabin to the cabin next in advance, when the section is clear to the home-signal at the latter cabin, but the line is occupied within this signal.

The following distances, northwards, from the point where the down home-signal at Possilpark first becomes visible, should be noted:—

	Yards.
To Cowlairs north junction down advance-signal, and Possilpark down distant-signal	42
To point where the view of the home-signal is lost	416
„ point where the home-signal again becomes visible	526
„ centre of the new Caledonian Railway bridge	536
„ down home-signal at Possilpark	650
„ point of collision	669
„ siding-points	709
„ Possilpark signal-cabin	910
„ junction of Ruchill branch	928

Evidence.

David Mackay states: I have been 10 years in the service, a signalman for over eight years, and at Possilpark for nearly eight years. The next block-signal cabin south from my cabin is Cowlairs north junction, a little over half a mile distant. Absolute block working is in force under the ordinary rules, one of which (No. 16), allows following trains to approach under the "Section clear but station blocked signal" before the station is clear. On the 5th January I came on duty about half-past 6 to work till 6 p.m. At 5.55 a goods train from Ruchill arrived on the branch, and I brought it off the branch on to the down main line. The engine was uncoupled, went across and round the train, and then propelled it back along the down line to Macfarlane's siding. There were about 15 vehicles, including the brake-van. While it was being pushed towards the siding I got the "Be ready" for a down passenger train from Cowlairs north junction. This was at 6.1 p.m. I accepted this train under clause 16, but my down signals were locked at danger. I did not see the train approaching, but I heard the collision at 6.5 p.m. I believe the passenger engine struck the third waggon from the end of the goods train next to Cowlairs, most of the goods train being still on the main line. The operation which was being performed was quite in accordance with rules. It was a fine clear night, and my signal-lamps were burning properly.

James Lang states: I have been about eight years in the service, a signalman for about 2½ years, and at Cowlairs north junction for nine months. On the 5th instant I came on duty at about 6 p.m. for 13 hours. At 6 p.m. I got the "Train entering" signal from Cowlairs west junction for the 5.15 p.m. inner circle train. I gave the "Be ready" signal to Possilpark at 6 p.m., and it was accepted at once under clause 16. The train arrived at about 6.2. I brought it nearly to a stand and then lowered my home-signal. I cautioned the driver verbally, and with a green flag, as he passed the cabin at 6.3, at a speed of about four miles an hour. He answered me by giving a whistle and a wave of his hand. I did not lower my starting-signal until after I had cautioned the driver. My proper hours of work are 12, viz., from 6 to 6, but my reliefman and I arrange mutually to take 13 hours at night and 11 by day. There is no authority for this.

Peter Sneddon states: I have been above 30 years in the service, and about 28 years a good's guard. On the 5th instant I came on duty at 7.25 a.m. to work till 6.55 p.m. I had been on duty for 11½ hours on the day before, leaving duty at 7.5 p.m. I was guard of a train of empty waggons which left Ruchill at 5.50 p.m., to go to Sighthill. There were 12 empty waggons and a brake-van in the train, and eight of the waggons had to be left at Possilpark in the foundry siding. We came along the down loop, stopped short of the points, the engine, four waggons and brake-van were uncoupled, put through the cross-over road, back along the up loop, and to the other end of the train, which was then pushed out on to the down line and along this line to the foundry siding. Coming from Ruchill, the engine was in front, then four waggons and the brake-van, and then the eight waggons for Possilpark, so that, when the train was being pushed back, the eight empty waggons were in front, then the engine, and then four waggons and the brake-van. I had been riding on the rear waggon coming from Ruchill, but got into the brake-van at Possilpark. My mate, who had come from Ruchill in the brake-van, had gone forward to the siding. I did not hear or see the passenger train coming, but cannot be sure if I heard a whistle or not. My driver stopped suddenly, and I felt that something had gone wrong, but thought some of the waggons had left the road at the points. I went forward and then found there had been a collision. Three waggons were knocked off the rails, but none of the passenger train vehicles left the rails. It was the foremost waggon which was struck. My train was being backed at a speed of about four miles an hour. I saw the driver of the passenger train, but did not speak to him.

John Lawson states: I have been four years in the service, and a goods guard for nine months. I was assistant guard to Sneddon on the 5th instant. I came on duty at 8.5 a.m. to work till 6.55. I had been on duty for 11½ hours, on the day before, leaving duty at 7.5 p.m. I was on the siding when the collision took place, ahead of my train. I saw the passenger train coming when about 100 yards off. It was running at 10 or 12 miles an hour with steam off. I saw that it was not going to stop. I called out and showed a red light. There was no whistling from the engine. The brakes were on, and sparks were flying from the carriage wheels. I did not notice the engine wheels. The train was running at about eight miles an hour when it struck the side of the front waggon in my train. There was no light on the waggon. It was a fine night; frosty, with snow on the ground.

Thomas Emery states: I have been nearly two years in the service as a driver, having been spare driver on the London and North-Western Railway for two years. On the 5th instant I came on duty at 7.50 a.m. to work till 6.55 p.m. I had left duty at about 7.30 p.m. the day before, after the same duty. My engine (No. 156), is a six-wheeled coupled goods engine, with a six-wheeled tender. I came with the train of empties from Ruchill and had eight to put off at Possilpark. I was pushing back these waggons at a speed of about four miles an hour when I saw a red light, which I thought was being shown by my assistant guard, who had gone ahead to see if the siding was all right. I slowed up, and then caught sight of the headlights of the passenger engine, so I stopped my train, and was just starting in the opposite direction when the collision occurred. I did not feel any shock upon the engine. I spoke to the driver of the passenger train when I went down to see what was wrong. He told me he had come from Cowlairs north junction under the "Caution" signal, but that his brake had not acted properly.

William Pawley states: I have been two years in the service as a driver, having previously been driving between seven and eight years in the Metropolitan District Railway. On the 5th instant I came on duty at 7.50 a.m. to work till 7.50 p.m., working all the time on the City and District services. My engine No. 67, is a tank-engine with eight wheels, a leading bogie, and driving and trailing wheels coupled. I was working the same train of six coaches all day. I had a Westinghouse brake all through the train, and working blocks on the four coupled engine-wheels. I was running chimney first. With these trains we are off for two trips, that is for two hours, for coaling. I was driver of the 5.15 train from Maryhill, which started at right time. We were delayed a little on the road, and left Springburn at 5.58 p.m., eight minutes late. I was checked a little at Cowlairs west junction, the home-signal being lowered just as I was getting up to it. Cowlairs north junction distant was at danger, and Cowlairs north junction home was kept at danger until I was within a few yards of it. It was then dropped, and I passed the cabin at a speed of about four miles an hour. I received a proper

"Caution" signal there from the signalman, and knew I must be prepared to stop at the home-signal at Possilpark. I went forward at a speed of about 10 miles an hour, and shut off steam before reaching the advance-signal. The distant-signal from Possilpark, which is a lower arm on this post, was at danger, and on passing this signal I could see the Possilpark home-signal at danger. I let my train run on without steam until I was about 200 yards from the new Caledonian bridge, and then I applied my Westinghouse brake. I had been running with 75 lbs. pressure, and I applied it slightly at first, reducing the pressure by about 5 or 6 lbs. I should say. When at the Caledonian bridge, and running at a speed of seven or eight miles an hour, I put the brake on full power. It came on all right upon the engine, but the carriage wheels skidded. I opened my sand-valves, as the rails were very slippery, but I was not able to stop, although I reversed the engine. I overran the home-signal, but had come to a stand when I struck the side of the front waggon of the goods train, which was still setting back. I had been using my Westinghouse brake all through the day, but it had not been acting well. I think some of the connections were frozen, that is the through pipe between the carriages. I did not examine the brake myself, but in the morning the carriage examiner came to me and said that the brake was frozen up, and he must get it thawed. He did not say where it was frozen and I did not see him thaw it. He asked me if I had a flare-lamp which I could lend him. He did not come for this lamp, and I did not see him again. I did not overrun any stations at all through the day, but I found the brake was not holding well, and had to come in very cautiously. I did not tell my guard that the brake was not working properly.

David Robertson states: I have been over 10 years in the service, and a fireman for about nine years. On the 5th instant I was firing for driver Pawley. I have heard his evidence and it is correct except on the following points. I think our speed was 15 miles an hour at the Caledonian bridge, and we were certainly moving forward when we struck the waggons, although our speed was a good deal reduced. I did not see my driver apply the brake at all until we reached the Caledonian new bridge. It came on all right on the engine, but the carriage wheels of the van next the engine skidded. I did not see the others. The driver had been complaining during the day that the brake was not acting very well. I do not think the sand-valves were full open till we struck the waggons. The first place I saw the home-signal was at the Caledonian bridge, and I then put on my hand-brake.

Robert Boyd states: I have been about 15 years in the service, and a guard for six years. On the 5th instant I came on duty at 2 p.m. to work till 11 p.m. I had been on the same duty the day before working on the circle service. I was guard of the 5.15 train, which left Maryhill at right time, and Springburn at 6 p.m., 10 minutes late. It was made up as follows:—Engine, third-class brake, one third-class, two first-class, one third-class, and one third-class brake, in which I was riding. It was fitted throughout with the Westinghouse brake. The brake seemed to me to be working quite well all through the day. On this journey we had a pressure of about 75 lbs. We were just about stopped at Cowlairs north junction, and came forward under the "Caution" signal. The driver shut off steam as soon as he was over the hill. I think our speed at Possilpark distant-signal, which was at danger, was from 12 to 15 miles an hour. I soon afterwards saw the home-signal at danger. I felt the brake begin to rub when about halfway between the distant and home signals. I think our speed at the new Caledonian bridge was about 10 miles an hour. The brake was put hard on when my van was just approaching the new Caledonian bridge. It came on properly, and the wheels were skidding on the carriage I was riding in. I was turning round to open the brake cock when the collision took place, and I was knocked over but not hurt to speak of. I think we were still running at a speed of eight or nine miles an hour. My driver never told me all the day that the brake was out of order. There were about 25 passengers in the train. I only heard of one being injured, a boy who said his ankle was sprained. Before my driver had applied the brake full power, I thought he was going too fast to stop at the home-signal, so I gave a jerk with the brake by opening the Westinghouse cock. He was still going on so I turned to open the cock again, when I fell.

James Hill, states: I have been seven years in the service, and four years carriage examiner at Maryhill. I examined the brakes on the carriages comprising the train which met with the accident. I examined them at 7.15 a.m., 8.3 a.m., 9.3 a.m., and 10.3 a.m., and the brakes were quite right each time. There were none of them frozen. The driver's statement as to what passed between us is absolutely incorrect. I spoke to him as I always do in the morning, and asked him if this train was going all right, and he said "Yes." This was when he arrived at Maryhill at 8.3. He had brought the train from Springburn. I did not tell him the brake was frozen or anything of the kind.

Conclusion.

This collision was due to want of care on the part of William Pawley, the driver of the 5.15 p.m. passenger train, who, having been properly cautioned at Cowlairs north junction signal-cabin, was quite aware that he might, and probably would, have to stop his train at Possilpark down home-signal, and yet failed to do so, and was still running at a speed of probably about eight miles an hour when he came into collision with the empty waggon train 19 yards inside that signal.

His train was a light train, fitted throughout with the Westinghouse brake, and he attributes the collision to a partial failure of this brake, which he says had not been working well all through the day.

According to his evidence, he passed Cowlairs north junction cabin—where he admits that he was cautioned—at a speed of four miles an hour, shut off steam before reaching Possilpark down distant-signal, 627 yards from the point of collision, passed this signal at a speed of about 10 miles an hour, let the train run on until within 335 yards of the point of collision, and there applied the brake slightly, applying it at full power when within 135 yards of the point of collision, and when his speed was, according to his estimate, only between seven and eight miles an hour, and failing to stop

although he reversed his engine and sanded the rails. He says that upon this occasion the brake acted well upon the engine, but that the carriage wheels skidded, and he thinks that his inability to stop his train was due to this cause.

The fireman did not perceive any application of the brake but one, viz., that at the Caledonian bridge, when within 135 yards of the point of collision, and he estimates the speed of the train at that place at 15 miles an hour, while the guard, who had felt the first slight application of the brake mentioned by the driver, and who says that the speed at the Caledonian bridge was about 10 miles an hour, states that the brake acted well when it was fully applied, which was when his brake compartment was approaching the Caledonian bridge, at which time the engine must have been within 80 yards of the home-signal. He also considers that the brake had been working perfectly all through the day, and states that, before the driver applied the brake fully in this instance, he thought the train was running too fast, and, in order to attract the driver's attention, gave a "jerk" to the brake by opening the cock in his compartment—a somewhat futile act, considering that he had it in his power actually to apply the brake, as he ought to have done if he thought there was any risk of not stopping at the home-signal, which he saw to be at danger. A carriage examiner who was called in evidence gave an absolute denial to a statement of the driver, that he had in the morning said that the brake was frozen up, and says that, on the contrary, the brake was in good order when he examined it on four occasions during the day.

With this evidence, I am forced to the conclusion that the driver's statement that the brake was out of order, is a mere excuse to cover his omission to get his train under proper control when approaching Possilpark under the "Caution" signal, and that the collision would never have happened if the brake had been applied soon enough.

Driver Pawley had at the time been on duty for 10¼ hours, his full tour of duty being 12 hours.

Signalman Lang's statement discloses the fact that, without any authority, he arranges with his colleague to work 13 hours on the night shift, and 11 hours on the day shift. This is an irregularity which should be stopped, for, from the point of view of safety, long hours of work are just as objectionable when performed for the convenience of the signalman as they are when imposed by the company.

In conclusion I must observe that, although the driver must be held immediately responsible for the collision, he ought never to have been placed in a position to bring it about, for it is, in my opinion, a most improper and dangerous mode of working to send a train forward on a falling gradient of 1 in 80 under the "Caution" or "Section clear, but station or junction blocked" signal, which signal should be used at as few places, and as seldom as possible, and never upon such a section as that from Cowlairs north junction to Possilpark.

I have, &c.,

F. A. Marindin,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Damage to Rolling Stock.

North British engine No. 67.—Smoke-box door, chimney, platform-plate, and bogie-frame, damaged; clack-box and air-cock broken.

North British waggon No. 35852.—Tram, doubling, headstock, end-rail, end cleading, and axle-boxes broken; also one guard-plate and one axle broken.

North British waggon No. 14232.—All woodwork destroyed beyond repair; one axle-box broken.

North British waggon No. 30792.—End-rails, end door, and cleading spring-shoes, and two guard-plates destroyed; bearing-springs, two guard-plates, and brake-gearing damaged.

Printed copies of the above Report were sent to the Company on the 8th February.

NORTH-EASTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
27th February 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 6th instant, the result of my enquiry into the circumstances attending a fatal accident at the Waldridge incline on the North-Eastern Railway in which a bank-rider named Ralph Mowbray was fatally injured at about 6.15 a.m. on Wednesday the 11th January.

Description.

Waldridge incline is situated west of Stella Gill on the Pontop branch, a part of the old Stanhope and Tyne mineral line. There are three steep inclines, with intermediate lengths on easier gradients, upon this section of the line, viz.: Waldridge incline, about three-quarters of a mile in length, Eden Hill, about three-quarters of a mile in length, and Stanley, about 1¼ miles in length, and all three are what is called "self-acting" inclines, the empty waggons being hauled up by a steel wire rope passing round a horizontal wheel 16 ft. in diameter, at the top of the incline, and attached at the other end to a descending loaded train.

The line is single from the bottom of the incline to what is called the "meeting-place," about halfway up, where there is a short double-line loop on which the ascending and descending trains cross. Above the meeting-place there are three parallel rails, the centre rail being common to the up and down roads, and at the top of the incline there are points leading into a set of three parallel lines, extending for a distance of about 350 yards, when the line becomes again a single line. The centre line of the three is the "full" line for the loaded trains to stand upon before starting down, and the two side lines are "empty" lines, used alternately for the empty trains to run into. On the centre line, about 183 yards west of the points at the top of the incline, is the horizontal wheel round which the wire rope works, and 33 yards short of the wheel are low blocks of wood on each side called "rope guides," which are placed there for the purpose of keeping the wire rope clear of the empty waggons when it is cast off.

The incline rises from Stella Gill on a gradient of 1 in 32, but at the top the gradient, over what is called the "kip," is somewhat steeper, the "empty" lines then falling slightly before rising again upon a gradient of 1 in 73, and the gradient of the "full" line being rather less steep.

Nearly opposite to the horizontal wheel on the "full" line, is a signal-cabin containing an apparatus for working a brake on the wheel, by means of which a descending train can be stopped upon the Waldridge incline in a distance of about 60 yards, and near this cabin there is an arrangement for signalling between the top and the bottom of the incline when the trains are ready to start.

The accident occurred on the south "empty" line, bank-rider Mowbray being found in the 4-ft. way of this line, clear of the rails, at a point between the "rope guide" and the wheel.

Evidence.

Matthew Bone states: I have been seven years in the service, and am now permanent-way inspector. The working on the Waldridge incline, and the other inclines on the Pontop branch, is under my superintendence. There are three such inclines, viz.:—Waldridge incline, nearly three quarters' mile in length; Eden Hill incline, about the same length; Stanley incline, about 1¼ mile in length. These inclines are all self-acting inclines, the empty waggons being pulled up by the loaded waggons, by means of a 12-lb. steel wire rope, about 3½ inches in circumference, working round a horizontal wheel 16 feet in diameter. At each end of this rope is a piece of chain 22 feet in length. At the top of each incline there is a cabin containing a brake-wheel, by means of which the train of waggons running down the incline can be checked, and stopped if necessary, in a distance of between 60 and 100 yards. There is a staff of about the same strength on each incline, viz., one brakesman, who attends to the brake, one bank head-man, who is responsible for the making up and the starting of the full trains, one bank foot-man, who has the same duties in connection with the empty waggon train, and two bank riders, whose duties are as follows:—one rider travels down at the tail of the full train, and one travels up at the head of the empty train. They stand on the buffer of the rear and front waggons, respectively, and it is their duty to detach the rope upon reaching the end of the journey. The chain at the end of the rope is attached to the train by a lock-chain, which is secured by a ring, kept in its place by a "forelock" or cotter. With the empty train the bank-rider should pull out his forelock when

over the top of the "kip," which is a steep rise in the incline just before the incline runs out into a dish. That would be about 40 yards before reaching a rope-guide at the side of the line. When about 20 yards from this rope-guide he should release the hook of the lock-chain by pushing off the ring. This he does generally with his foot, but sometimes with his hand. The train comes to a stand in the dish, and is taken by an engine to the foot of the next incline. After the release of the lock-chain the chain and rope drop, and the bank-rider then jumps down, and unhooks the lock-chain from the draw-bar hook. There is no necessity for him to do this until the train has come to a stand, but in practice he usually jumps off while the train is still moving forward. If the lock-chain is not released the rope and chain would be wrapped round the rope-guide, and would pull the bank-rider, who had jumped down, against the inner buffer of the leading waggon, and that is what I understand happened on this occasion when bank-rider Mowbray was killed. He told me so. If the rope is not detached the rope-guide is pulled away, as it was on this occasion. The rope-guide is to draw the rope when detached clear of the front of the waggons. There are means of signalling from the top to the bottom of the incline, to indicate when the trains are attached and ready to start. On Wednesday the 11th January I was called at about 6.20 a.m. from my house, which is near the foot of the incline, and told that an accident had happened. I went up immediately after making some arrangements at bank-rider Mowbray's house. When about half-way up the incline I met Mowbray being carried down the Turnpike Road. I went to him and followed down. Mowbray turned round and asked if that was "Matthew," and then said "I don't know what I "was thinking about, I forgot to knock the lock-"chain off." His left leg was badly crushed, and he died from his injuries about 1 p.m. on Friday 13th January. He was a good steady man, who had been on this work for about seven months. He had been about 20 years in the service as waggon-sorter, and relief waggon-rider. I have known Waldridge incline all my service. There was a fatal accident here about 12 years ago, when a bank-rider slipped between the waggons in getting up at the foot of the incline after the train had started. This he had no business to do. This is the only fatal accident on this incline that I can remember. I do not remember any case of a bank-rider being killed upon other inclines on this branch. There have been cases of waggons leaving the rails, but in these cases the bank-riders were not injured. The maximum speed attained by the trains is about 10 or 11 miles an hour. All the men working the incline came on duty at the same time, viz., at 6 a.m., and the hours are supposed to be until 5 p.m. on ordinary days, and 2 p.m. and 4 p.m. on alternate Saturdays. When there are loaded coal waggons to go down, and empty waggons to go up, the men work according to the requirements of the traffic. At the time of the accident the arrangement was that all work should cease at midnight; but that the work should not go on so late for more than three days in the week, ceasing at about 9 a.m. upon other nights if it was necessary to go on for so long. Since the 20th January there has been an order that work is never to be continued after 10 p.m. The whole of the men are on weekly wages, viz.:—

	£	s.	d.
Brakesmen	1	8	6
Bank-head man	1	6	0
Bank-foot man, a young man of three or four years' service		18	0
Bank-riders	1	8	6

This is the pay from 6 a.m. to 5 p.m. After 5 p.m. they receive 6*d.* an hour, except the bank-foot man, who gets 4*d.* an hour.

James Dunn states: I have been 25 years in the service, and a bank-rider on Waldridge incline for over 13 years. I have heard inspector Bone's evidence read over, and the description he has given of the working on Waldridge incline is correct. At the time of the accident to bank-rider Mowbray I was at the foot of the incline, having come down with a loaded train. I saw Mowbray when we met at the meeting-place. He was standing in his usual attitude at the front of his train. He was quite a capable bank-rider. When detaching the chain at the top of the incline I have never known the cotter to stick so that it could not be pulled out. If it did stick I would step off, and try to stop the train by braking it or spragging it. The trains all consist of nine waggons. I have never known of any accident to a bank-rider, except the one mentioned by Mr. Bone. I think the present way of detaching the lock-chain is the handiest. I do not think that any mechanical appliances, such as a lever or a trigger, would be any improvement. We get one hour off duty for meals in three periods of 20 minutes, and we are resting for several periods of different lengths, when there are no waggons ready to go. I do not wish for any change in the hours of work. When we want leave we can get it and a man is sent to relieve us. At this time of year the hours are no doubt rather long, but in summer they are light. We made application some time since for the working day to be 11 hours instead of 12 hours, and that was granted, but we have never made any other application for the hours to be shortened. In December last the Company asked us if we would like to have the work divided into two shifts. We had a meeting of the men on the Pontop branch on January 15th, and we decided that we would rather go on as we were. We were unanimous. We can always get relief if we want it. There is no difficulty about it.

James Welsh states: I have been over 27 years in the service, and was a bank-rider at Stanley incline, and Waldridge for several years. I am now brakesman at Waldridge. I have heard inspector Bone's evidence read over, and it is correct. On the 11th January I came on duty at 6 a.m. as usual, having left duty at about 10 p.m. the previous day. I was in the brake-cabin when the accident happened. Mowbray was coming up the south-side line with empties. It was dark and I could not see the train coming, but I saw the lamp which Mowbray had in his hand. I missed hearing the chain drop as usual, but very soon I saw by the motion of the lamp that Mowbray had got down, and then I heard him shout. It was then quite out of my power to do anything to stop the train, so I ran down to Mowbray's assistance When I got there the last waggon was passing above him. He was lying in the 4-ft. way, clear of the rails. He said, "I don't know what I have been thinking about." I went down to call inspector Bone. The cotter was lying on the ground, about six yards away from Mowbray, but the chain was still attached to the waggons and the rope guide was pulled away. Mowbray was a steady man, quite up to his duties. He was 38 years old. I worked as a bank-rider for some years and I think the present way of uncoupling the waggons, which has always been used, is the best. I agree with Mr. Dunn in thinking that, and also as to the hours of work.

William Geldart states: I have been about 33 years in the service, and have been about five years working as bank-head man at Waldridge incline. I have heard Inspector Bone's evidence and his description of the working of the Waldridge incline is correct. On the 11th January I came on duty as usual at 6 a.m., having left duty at about 10 p.m. on the previous day. I was standing about 60 yards away from the spot where bank-rider Mowbray was injured. I was close against the cabin. The train was coming up on the south-side line. I was standing waiting to hook on the full set to go down. I was just preparing to let this loaded set run forward a bit, ready to be

hooked on, when I heard Mowbray shout. I ran to his assistance. He was in the 4-ft. way, clear of the rails, and the waggons were passing above him. All the nine waggons passed over him before coming to a stand. The chain was still attached to them, and it had pulled away the rope-guide. I found that Mowbray was badly injured on the left leg, but he was sensible. He said "I do not know whatever I can have been thinking of." He said nothing more. I afterwards examined the lock-chain The fore-lock or cotter had been taken out, but the ring had not been kicked back. It was clear that Mowbray had jumped off without having kicked back the ring, so that the chain remained coupled to the waggons, and when it passed the rope-guide it pulled Mowbray against the buffer. He was a steady man and knew his work well. I have occasionally worked as a bank-rider. I do not think any better way could be found for detaching the coupling. I agree with Dunn in this matter. The only fatal accident to a bank-rider that I can remember was that mentioned by Inspector Bone. That was his own fault. I quite agree with Dunn as to the hours of work. We can get relief if we want it. I have never heard Mowbray make any complaint as to his hours.

John Currie states: I have been 29 years in the service and 25 years a bank-rider. I am now working on the Stanley incline. In the first half of my service the hours were much longer than they are now, but I have never experienced any evil effects from long hours. We asked the Company to reduce the working day from 12 to 11 hours, and they did so; but we have never asked for any reduction of our hours of work. We do not consider ourselves overworked and we are all quite contented to leave the hours as they are. I have never been off duty an hour from any accident, and very few from sickness. I do not think that any improvement is necessary, or is feasible, in the way of uncoupling in these inclines. It is that used all over the district. We have often been asked if we could suggest any improvement, and have been told not to be afraid of making any suggestions we could for our safety. I wish to state that I am sure I can speak for the whole of the men on this branch, and I do not think that you could find anywhere a body of men more satisfied with their employers. If there be fault with anybody as to the number of hours we are working, that fault is our own, as there has never been any pressure put upon us to work long hours. It is entirely our own wish. I was very intimate with Ralph Mowbray, and I had frequent conversations with him. He never made any suggestion that he felt his hours of work to be too long. Although our hours may seem long, there are frequent intervals when we have nothing to do.

William Grisenthwaite states: I have been nearly 12 years in the service, and am number-taker at Stella Gill. I am in the mineral department. On the 11th January, I was going off duty at 6 a.m., after 11 hours duty. I live half-way up the incline, and generally when going home I travel up with one of the trains of empties. On this occasion I went up with Mowbray in the first train which started, getting off when above the meeting place. I was standing on the left buffer and Mowbray on the other. We were talking on the way up, and Mowbray was in his usual spirits. He did not seem tired out, or in any way different from usual. He showed me a lamp when I was getting down. I knew him well. I never heard him make any complaint as to his work.

Conclusion.

The mode of working the Waldridge and other inclines upon the Pontop branch, and, I understand, some inclines upon private lines in the district, as described in the foregoing evidence, is as follows:—

The loaded trains being brought to the top, and the empty trains to the bottom of the incline, by locomotives, are divided into sets of nine waggons, one of which sets is attached to each end of a steel wire rope, 3½ inches in circumference, passing round a horizontal wheel, 16 feet in diameter, at the top of the incline.

At each extremity of the rope is a piece of chain 22 feet in length, and these pieces of chain are coupled to the drawbar hooks of the front waggon of the empty set, and the rear waggon of the full set, by what are called "lock-chains"; the shackle at one end of the lock-chain being hung on to the drawbar hook, and the other end of it being fitted with a hinged hook, which is passed through a link in the chain and is kept closed by a moveable ring secured in its place by a "fore-lock" or cotter. When uncoupling, the cotter is first pulled out by the bank-rider, who stands upon the step above the buffer of the waggon, the ring is then kicked back, or sometimes pulled back by hand, and the chain and wire rope fall to the ground, the lock-chain remaining attached to the draw-bar hook until it is lifted off by the bank-rider, who usually jumps down before the waggons have come to a stand.

In this case it is quite clear that bank-rider Mowbray had pulled out the "fore-lock," but had omitted to kick back the ring on the "lock-chain hook," so that when he jumped down at the usual place in front of the empty set upon which he had ridden up the incline, the wire rope was still attached to the waggons, and on passing the rope-guide was pulled across, and dragged the unfortunate man against the right-hand leading buffer of the front waggon, causing such serious injuries that he died two days afterwards.

No one was in a position to save him from the consequences of his mistake, and no person is to blame for what occurred.

Bank-rider Mowbray was a competent man, and he had only been on duty for about a quarter of an hour at the time, this being the first trip of the day.

He had come on duty at 6 a.m., having left duty on the previous day at 9.50 p.m. after 15 hours 50 minutes duty, but according to the evidence he was in no way unfit for work.

I attach returns which have been furnished by the Company, from which it appears that the hours of duty for all the men on the Waldridge incline, on Monday 9th, Tuesday 10th, and Wednesday 11th, January, were 18 hours, 15 hours 50 minutes, and 16 hours respectively, but that owing to numerous stoppages, due to waiting for waggons, and meals, the actual number of hours worked on these three days, deducting all the stoppages, were 9 hours 59 minutes, 9 hours 9 minutes, and 11 hours 28 minutes. Some of the stoppages were for very short periods, but some were for as long as an hour and a half, and upon each of these days, deducting only stoppages of 20 minutes and more, the men were resting for over 4½ hours.

Taking the whole period for which I obtained returns, viz., from November 28th to February 4th, which is the busiest time of year, the average daily hours of duty were 14 hours 41 minutes, and the average daily hours worked, deducting all stoppages, were 9 hours 5 minutes.

The working day is fixed at 11 hours, viz., from 6 a.m. to 5 p.m. with an hour allowed for meals, and all over that number of hours are paid for as overtime. It has been usual to go on as long as there was any traffic to send down, the only limitation being that the work was to cease at midnight on three days in the week, and at 9 p.m. on other days, but since the accident orders have been given that work is never to be continued after 10 p.m.

It is clear that the hours of work on these inclines during the busy season are exceedingly long, but the evidence on this head is remarkable.

It seems that the Company made offers to the men to reduce the hours by establishing two shifts, but that the men were unanimous in asking that no change should be made, the Company having acceded to their request that the regular working day should be 11 instead of 12 hours as heretofore.

The men expressed themselves as being thoroughly contented with their lot, and it was most satisfactory to hear the terms in which they spoke of their employers. Under these circumstances it would in my opinion be very undesirable to take any further action which might possibly have the effect of disturbing the harmony which evidently now exists upon this portion of the North-Eastern Railway.

The work performed by the bank-riders has the appearance of being of a dangerous character, and no doubt it would be so to an inexperienced man, but these men have a very long training, commencing when quite young, and many of them, I understand, succeeding to their fathers or other relations, and this accident is the first of the kind on record, although one bank-rider was killed about 12 years ago, when trying to get up at the middle of a train of empties after it had started, which he ought not to have attempted to do.

I would have thought that a better and safer mode of uncoupling than that in force might easily have been devised, but all the men are averse to any change, although they have frequently been asked if they could suggest any improvement, and I hesitate therefore to suggest that any alteration should be made in a system with which all those interested have been familiar for years.

I have, &c.,
F. A. Marindin,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Working of Waldridge Incline.

From week ending 3rd December 1892, to 4th February 1893.

	H.	M.
Total number of hours on duty - - - -	837	31
Daily average - -	14	41
Total time minus stoppages - - - - -	518	9
Daily average - -	9	5

Daily Working.

For week ending 3rd December 1892.

	Monday, Nov. 28th.	Tuesday, Nov. 29th.	Wednesday, Nov. 30th.	Thursday, Dec. 1st.	Friday, Dec. 2nd.	Saturday, Dec. 3rd.	Total.
	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
Commenced	At 6 o'clock each morning.						
Finished	7 40	8 35	9 5	8 55	9 0	6 55 P.M.	
Total time on duty each day	13 40	14 35	15 5	14 55	15 0	12 55	86 10
Average time on duty	—	—	—	—	—	—	14 21
Stoppages:—							
For loaded waggons	4 2	1 20	1 19	0 42	1 40	4 47	13 50
For empty waggons	0 50	4 8	3 14	5 3	2 39	Nil	12 54
For meals	1 0	1 0	1 0	1 0	1 0	1 0	6 0
Total stoppages — Duration	5 52	6 28	5 33	6 45	5 19	5 47	35 44
Total stoppages — Number	17	16	19	16	23	21	112
Total time, minus stoppages	7 48	8 7	9 32	8 10	9 41	6 8	50 26
Average per day	—	—	—	—	—	—	824

For week ending 10th December 1892.

	Monday, 5th.	Tuesday, 6th.	Wednesday, 7th.	Thursday, 8th.	Friday, 9th.	Saturday, 10th.	Total.
	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
Commenced	At 6 o'clock each morning.						
Finished	9 5	8 25	9 45	9 0	8 55	7 55 P.M.	
Total time on duty each day	15 5	14 25	15 25	15 0	14 55	13 55	88 45
Average time on duty	—	—	—	—	—	—	14 47
Stoppages:—							
For loaded waggons	3 29	2 7	2 48	1 16	3 12	1 40	14 32
For empty waggons	3 57	0 52	2 19	1 55	Nil	0 38	9 41
For meals	1 0	1 0	1 0	1 0	1 0	1 0	6 0
Total stoppages — Duration	8 26	3 59	6 7	4 11	4 12	3 18	30 13
Total stoppages — Number	18	17	22	18	18	18	111
Total time, minus stoppages	6 39	10 26	9 18	10 49	10 43	10 37	58 32
Average per day	—	—	—	—	—	—	9 45

For week ending 17th December 1892.

	Monday, 12th.	Tuesday, 13th.	Wednesday, 14th.	Thursday, 15th.	Friday, 16th.	Saturday, 17th.	Total.
	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
Commenced	At 6 o'clock each morning.						
Finished	7 55	8 0	9 0	9 10	8 5	4 15 P.M.	
Total time on duty each day	13 55	14 0	15 0	15 10	14 5	10 15	82 25
Average time per day	—	—	—	—	—	—	13 44
Stoppages:—							
For loaded waggons	4 44	2 55	1 10	1 59	2 7	0 27	13 22
For empty waggons	Nil.	0 13	4 30	0 53	3 44	1 53	11 18
For meals	1 0	0 59	0 57	1 0	1 0	0 40	5 36
Total stoppages — Duration	5 44	4 7	6 37	3 52	6 51	3 5	30 16
Total stoppages — Number	22	19	19	20	21	14	115
Total time, minus stoppages	8 11	9 53	8 23	11 18	7 14	7 10	52 9
Average per day	—	—	—	—	—	—	8 41

For week ending 24th December 1892.

	Monday, 19th.	Tuesday, 20th.	Wednesday, 21st.	Thursday, 22nd.	Friday, 23rd.	Saturday, 24th.	Total.
	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
Commenced	At 6 o'clock each morning.						
Finished	9 10	8 45	11 25	12 0	12 5	6 50 P.M.	
Total time on duty each day	15 10	14 45	17 25	18 0	18 5	12 50	96 15
Average per day	—	—	—	—	—	—	16 2
Stoppages:—							
For loaded waggons	2 49	1 0	1 21	1 41	1 49	1 10	9 50
For empty waggons	5 0	5 11	3 51	4 34	4 17	0 33	23 26
For meals	1 0	1 0	1 20	1 20	1 20	1 0	7 0
Total stoppages — Duration	8 49	7 11	6 32	7 35	7 26	2 43	40 16
Total stoppages — Number	16	16	22	21	25	13	113
Total time, minus stoppages	6 21	7 34	10 53	10 25	10 39	10 7	55 59
Average per day	—	—	—	—	—	—	9 19

For week ending 31st December 1892.

	Monday, 26th.	Tuesday, 27th.	Wednesday, 28th.	Thursday, 29th.	Friday, 30th.	Saturday, 31st.	Total.
	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
Commenced	Holiday	At 6 o'clock each morning.					
Finished	—	6 50	8 50	8 55	8 50	4 50 P.M.	
Total time on duty each day	—	12 50	14 50	14 55	14 50	10 50	68 15
Average time per day	—	—	—	—	—	—	13 27
Stoppages—							
For loaded waggons	—	4 7	2 6	3 28	1 48	3 11	14 40
For empty waggons	—	0 7	1 46	3 24	3 59	0 27	9 43
For meals	—	1 0	0 58	0 57	1 0	1 0	4 55
Total stoppages — Duration	—	5 14	4 50	7 49	6 47	4 38	29 18
Total stoppages — Number	—	14	19	18	15	18	84
Total time, minus stoppages	—	7 36	10 0	7 6	8 3	6 12	38 57
Average per day	—	—	—	—	—	—	7 35

For week ending 7th January 1893.

	Monday, 2nd.	Tuesday, 3rd.	Wednesday, 4th.	Thursday, 5th.	Friday, 6th.	Saturday, 7th.	Total.
	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
Commenced	Holiday	At 6 o'clock each morning.					
Finished	—	8 35	8 55	8 55	12 0	7 55 P.M.	
Total time on duty each day	—	14 35	14 55	14 55	18 0	13 55	76 20
Average time per day	—	—	—	—	—	—	15 16
Stoppages—							
For loaded waggons	—	3 24	3 24	2 18	1 37	0 18	11 1
For empty waggons	—	3 24	3 26	3 54	4 36	2 23	17 43
For meals	—	1 0	1 0	1 0	1 20	1 0	5 20
Total stpopages — Duration	—	7 48	7 50	7 12	7 33	3 41	34 4
Total stpopages — Number	—	17	25	19	18	10	89
Total time, minus stoppages	—	6 47	7 5	7 43	10 27	10 14	42 16
Average per day	—	—	—	—	—	—	8 27

For week ending 14th January 1893.

——	Monday, 9th.	Tuesday, 10th.	Wednesday, 11th.	Thursday, 12th.	Friday, 13th.	Saturday, 14th.	Total.
	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
Commenced	At 6 o'clock each morning.						
Finished	12 0	9 50	10 0	9 0	7 20	3 35 P.M.	
Total time on duty each day	18 0	15 50	16 0	15 0	13 20	9 35	87 45
Average per day	—	—	—	—	—	—	14 37
Stoppages—							
For loaded waggons	1 48	2 1	1 29	1 35	1 12	1 54	9 59
For empty waggons	5 10	3 40	2 3	3 3	1 55	Nil.	15 51
For meals	1 3	1 0	1 0	1 0	1 7	0 40	5 50
Total stoppages — Duration	8 1	6 41	4 32	5 38	4 14	2 34	31 40
Total stoppages — Number	23	21	21	22	15	12	114
Total time, minus stoppages	9 59	9 9	11 28	9 22	9 6	7 1	56 5
Average per day	—	—	—	—	—	—	9 20

For week ending 21st January 1893.

——	Monday, 16th.	Tuesday, 17th.	Wednesday, 18th.	Thursday, 19th.	Friday, 20th.	Saturday, 21st.	Total.
	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
Commenced	At 6 o'clock each morning.						
Finished	9 0	10 0	9 15	8 40	8 40	7 25 P.M.	
Total time on duty each day	15 10	16 0	15 15	14 40	14 40	13 25	89 10
Average per day	—	—	—	—	—	—	14 51
Stoppages—							
For loaded waggons	3 3	1 28	0 49	2 6	1 11	1 25	10 2
For empty waggons	2 2	5 2	2 47	2 1	1 52	0 35	14 19
For meals	1 0	1 3	0 59	1 0	1 3	1 0	6 5
Total stoppages — Duration	6 5	7 33	4 35	5 7	4 6	3 0	30 26
Total stoppages — Number	17	19	16	18	17	14	101
Total time, minus stoppages	9 5	8 27	10 40	9 33	10 34	10 25	58 44
Average per day	—	—	—	—	—	—	9 47

For week ending 28th January 1893.

——	Monday, 23rd.	Tuesday, 24th.	Wednesday, 25th.	Thursday, 26th.	Friday, 27th.	Saturday, 28th.	Total.
	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
Commenced	At 6 o'clock each morning.						
Finished	8 48	8 41	7 3	5 59	12 0	Idle P.M.	
Total time on duty each day	14 48	14 41	13 3	11 59	18 0	—	72 31
Average per day	—	—	—	—	—	—	14 30
Stoppages—							
For loaded waggons	3 25	2 17	3 4	4 36	2 26	Nil.	15 48
For empty waggons	0 49	1 14	1 25	Nil.	2 45	Nil.	6 13
For meals	1 0	1 0	1 0	1 0	1 20	Nil.	5 20
Total stoppages — Duration	5 14	4 31	5 29	5 36	6 31	Nil.	27 21
Total stoppages — Number	15	19	21	18	25	—	98
Total time minus, stoppages	9 34	10 10	7 34	6 23	11 29	Nil	45 10
Average per day	—	—	—	—	—	—	9 2

For week ending 4th February 1893.

	Monday, Jan. 30th.	Tuesday, Jan. 31st.	Wednesday, Feb. 1st	Thursday, Feb. 2nd.	Friday, Feb. 3rd.	Saturday, Feb. 4th.	Total.
	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
Commenced	At 6 o'clock each morning.						
Finished	8 45	9 55	9 55	8 35	9 20	7 25 P.M.	
Total time on duty each day	14 45	15 55	15 55	14 35	15 20	13 25	89 55
Average per day	—	—	—	—	—	—	14 42
Stoppages—							
For loaded waggons	3 12	1 30	2 55	2 25	1 30	0 50	12 22
For empty waggons	2 3	2 34	1 21	1 29	2 20	1 26	11 13
For meals	1 0	1 0	1 13	1 8	1 0	1 8	6 29
Total stoppages—Duration	6 15	5 4	5 29	5 2	4 50	3 24	30 4
Total stoppages—Number	18	20	25	23	17	17	120
Total time minus stoppages	8 30	10 51	9 26	9 33	10 30	10 1	59 51
Average per day	—	—	—	—	—	—	9 58

WALDRIDGE INCLINE, January 9th, 1893,
Summary of Waiting.

From	To	Total.	Remarks.
H. M.	H. M.	H. M.	
6 0	7 25	1 25	Waiting for empty waggons.
7 42	8 2	0 20	Breakfasts.
8 47	10 27	1 40	Waiting for empty waggons.
10 46	11 9	0 23	Waiting for coal.
11 38	11 48	0 10	„ „
11 58	12 18	0 20	Dinners.
2 9	2 16	0 7	Waiting for coal.
2 23	2 53	0 30	„ empties.
3 10	3 19	0 9	„ „
3 59	4 18	0 19	Teas.
4 42	4 47	0 5	Waiting for coal.
4 59	5 8	0 9	„ „
5 21	5 27	0 6	„ „
5 34	5 51	0 17	Waiting for empties.
6 12	6 30	0 18	„ „
7 44	7 55	0 11	Waiting for coal.
8 2	8 22	0 20	Suppers.
8 43	9 8	0 25	Waiting for empties.
9 34	9 45	0 11	„ „
10 6	10 13	0 7	Waiting for coal.
10 26	10 46	0 20	„ „
11 35	11 44	0 9	„ „
Total -		8 1	

WALDRIDGE INCLINE, January 10th, 1893,
Summary of Waiting.

From	To	Total.	Remarks.
H. M.	H. M.	H. M.	
6 56	7 10	0 14	Waiting for coal.
7 23	7 28	0 5	„ „
7 43	8 13	0 30	„ „ and breakfast.
8 27	9 1	0 34	„ „
9 13	9 20	0 7	„ „
10 3	10 9	0 6	„ „
10 55	12 0	1 5	Waiting for empty waggons.
12 0	12 20	0 20	Dinners.
1 5	1 33	0 28	Waiting for empty waggons.
1 47	2 2	0 15	„ „ „
2 15	2 26	0 11	„ „ „
2 39	2 52	0 13	„ „ „
3 30	3 39	0 9	Waiting for coal.
3 52	4 12	0 20	Teas.
5 3	5 11	0 8	Waiting for coal.
5 37	6 37	1 0	Waiting for empty waggons.
7 36	8 4	0 28	„ „ „
8 24	8 35	0 11	Waiting for coal.
9 1	9 12	0 11	„ „
9 38	9 44	0 6	„ „
Total -		6 41	

Printed copies of the above Report were sent to the Company on the 4th April.

SHEFFIELD AND MIDLAND RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
14th March 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 7th instant, the result of my enquiry into the circumstances attending a collision which occurred on the 3rd instant, at New Mills, on the Sheffield and Midland Railway.

In this case the 8.30 a.m. Manchester, Sheffield, and Lincolnshire passenger train from Hayfield to Manchester, when approaching New Mills station at 8.38 a.m., came

into collision at New Mills junction, where the Hayfield branch joins the main line, with the 6.10 a.m. down Midland coal train from Rowsley to Hartford, which had been shunted, and was being backed along the up main line across the junction.

Four of the waggons in the coal train were thrown off the rails, fouling the down main line, and the leading and trailing wheels of the engine of the passenger train, and one pair of wheels under the third and fourth carriages also left the rails. Five of the vehicles in this train were buffer-locked, and the third carriage was partially telescoped, the trailing-buffers of the second carriage having driven back the seat in the front compartment of the third carriage.

A passenger in this carriage was injured, and the fireman of the passenger engine was also slightly injured.

The Manchester, Sheffield, and Lincolnshire passenger train was made up as follows, viz.: Tank-engine, running bunker first, third-class brake-carriage, one third-class, one composite, one first-class, and one third-class carriages, and third-class brake-carriage, all the vehicles having eight wheels, and the whole train being fitted with the automatic vacuum-brake.

The Midland coal train consisted of engine and tender, 17 loaded waggons, and brake-van.

A return of the damages to the rolling-stock and permanent-way is appended.

Description.

About 130 yards east of New Mills station the Midland main line from Derby to Manchester, running from the south-east, and curving to the west, is joined on the north side by the Manchester, Sheffield, and Lincolnshire branch from Hayfield, running from the north-east, the trailing-points of the junction being upon the down main line. Both the main and the branch lines are in tunnels close up to the junction, the mouth of the main line tunnel, which is 114 yards long, being 88 yards from the junction-points, and the mouth of the branch line tunnel, which is 194 yards long, being within 69 yards of these points. The point of collision, which was at the fouling point of the line from Hayfield and the up main line, is only 21 yards outside the mouth of the branch line tunnel.

New Mills junction signal-cabin, which contains 18 working levers and six block instruments, is on the south side of the line 81 yards west of the junction, and the nearest block signal-cabin on the Hayfield branch, distant 682 yards, is New Mills tunnel end cabin, where the Hayfield single line becomes double up to the junction.

Immediately opposite to New Mills junction signal-cabin is a main line cross-over road, the trailing-points of which on the up main line are within 52 yards of the junction facing-points.

The branch down home-signal is upon a bracket just outside the tunnel mouth, and it can be seen from an engine, when the tunnel is clear, for about 120 yards.

The branch down distant-signal is on the proper side of the line 287 yards outside the home-signal, being a lower arm upon the tunnel end down advance starting-signal, and it can be seen for about 250 yards.

The tunnel end down home-signal is 75 yards north-east of the tunnel end cabin, and 93 yards beyond this signal there is a footbridge over the branch, which is about as far as an engine approaching from Hayfield can be seen by a man in the signal-cabin, standing behind the lever-frame.

The branch falls sharply towards the junction, the gradients from the tunnel end cabin being 1 in 102 and 1 in 114.

The main line gradient is 1 in 90, falling westwards towards the junction.

Absolute block working is in force under the ordinary rules, and the following is an extract from the special rules for working in the tunnel end cabin:—

"2. When the disc-signal fixed in your box, and worked from New Mills junction, is at danger, the danger-signal must also be exhibited at your signals applicable to trains and engines going towards New Mills junction, and no train or engine must be allowed to pass your post on the down line, without having previously been brought to a stand outside the home-signal. When this has been done, and permission has been obtained on the block telegraph for the train or engine to proceed, the necessary signals must remain at danger for the protection of the train or engine, and the proper signal be lowered to give permission for it to proceed."

The total length of the Manchester, Sheffield, and Lincolnshire train was 250 feet, and its weight 133 tons 11 cwts., the engine alone weighing 58 tons 11 cwts.

The total weight braked was :—

	Tons.	Cwts.
On engine - - - - -	34	5
On carriages - - - - -	50	19
Total -	84	4

or rather under two-thirds of the total weight.

The following distances eastwards from New Mills junction signal-cabin should be noted :—

	Yards.
To trailing-points of cross-over road on up main line - -	29
„ junction facing-points - - - - -	81
„ point of collision - - - - - -	139
„ branch down home-signal - - - - -	154
„ tunnel mouth on branch line - - - -	160
„ tunnel mouth on main line - - - - -	169
„ point from which branch down home-signal can be seen -	274
„ east-end of tunnel on branch - - - -	354
„ branch down distant-signal and tunnel end cabin advance-signal - - - - - - -	431
„ tunnel end signal-cabin - - - - -	682

Evidence.

Frederick Charles Meakin, engine-driver, states: I have been in the service of the Midland Railway Company 23 years, a driver eight years, and accustomed to run past New Mills as driver and fireman about 16 years. On March 3rd I came on duty at 5.20 a.m. to work the 6.10 a.m. coal train Rowsley to Hartford, and the 12.20 p.m. Hartford to Rowsley, due to arrive at Rowsley at 4.13 p.m. On March 2nd I came on duty at 5.30 a.m. and signed off duty at 6.25 p.m., after working the Matlock and Bakewell shunting engine. On March 3rd I left Rowsley about 35 minutes late owing to other trains taking precedence. On leaving Rowsley my train consisted of six-wheel coupled engine, No. 734, six-wheeled tender, and 17 loads of coal, with a guard's brake in the rear. All the wheels of the engine and tender were fitted with the steam-brake. Nothing unusual occurred between Rowsley and New Mills. On approaching New Mills goods station on the down goods line my train was brought to a stand at the New Mills goods junction home-signal. I stood there possibly about three or four minutes, the home and starting signals were then lowered and I proceeded to New Mills passenger station. On approaching New Mills junction the home-signal near the end of the tunnel was off and the starting-signal was at danger. I brought my train to a stand alongside the down platform with the guard's brake near the signal-box. Shortly afterwards, I received a hand-signal from my guard and the signalman to back my train. I obeyed the signal and my train was shunted through the cross-over road between the up and down main lines near to the junction signal-box, and on to the up line towards Derby. When my engine was near to the signal-box I told my fireman to leave the engine and go to the box. Shortly afterwards I heard an engine whistle and it sounded as though the engine was in the tunnel, but I could not tell which tunnel. I shut off steam and applied the brake, but directly afterwards the engine of the Manchester, Sheffield, and Lincolnshire passenger train from Hayfield came into collision with the fifth waggon from my engine. The speed of my train at the time was possibly three or four miles an hour. I was knocked down in the tender, but was not injured, and I afterwards found that the passenger engine had struck the fifth waggon from my tender, causing that and three others to leave the rails. I cannot estimate the speed at which the Hayfield train was running, nor did I notice whether the brakes upon that train were applied.

John Walter Partridge, fireman, states: I have been in the service of the Midland Railway Company about 10 years, a fireman about four years, and accustomed to run past New Mills as fireman all the time. On March 3rd I came on duty at 5.20 a.m. to act as fireman with driver Meakin. On March 2nd I also acted as fireman with him. I came on duty at 5.30 a.m. and signed off duty at 6.25 p.m. I can confirm the evidence given by driver Meakin. I entered the junction signal-box just before the collision took place. I believe no word had passed between the signalman and myself at the time. The signalman requested me to go and inform the station-master what had occurred, but I found that the station-master had been advised before I reached him. I returned to the signalman and remained with him until requested to return to the engine by my driver. The signalman did not say anything to me as to what caused the collision. It was a clear morning. My train was still moving back at the time of the collision, but I cannot give any estimate of its speed, or of the speed of the Manchester, Sheffield, and Lincolnshire train.

George Drabble, goods guard, states: I have been in the service of the Midland Railway Company about 35 years, and a goods guard 26 years. On March 3rd, I came on duty at 5.40 a.m. to work the 6.10 a.m. coal train from Rowsley to Hartford and the 12.20 p.m. Hartford to Rowsley, due to arrive at Rowsley at 4.13 p.m. On March 2nd I worked the same train and went off duty at 5.40 p.m. My train on leaving Rowsley consisted of engine, tender, and 17 loads of coal with a guard's brake in the rear in which I travelled. My train left Rowsley 35 minutes late, caused by other trains taking precedence. My train was brought to a stand on the down goods line at New Mills goods junction at 8.25 a.m. and left at 8.30 a.m., and my train was brought to a stand at New Mills passenger station with the brake near to the junction signal-box. At this time a Manchester, Sheffield, and Lincolnshire empty waggon train going to Peak Forest was passing on the up main line, and the junction signalman said "As soon as the Manchester, Sheffield,

" and Lincolnshire train has passed, I shall want you " to shunt to let the Hayfield passenger train pass," and as soon as the Manchester, Sheffield, and Lincolnshire train had passed the signalman opened the cross-over road points and signalled the train back. I also gave the driver a signal, and my train was crossed from the down main line on to the up main line to Derby. I remained in my brake, and shortly after it had entered the tunnel I heard a Manchester, Sheffield, and Lincolnshire engine whistle, and from the sound of the whistle I felt sure that the engine was very near to my train. I was looking towards the junction when I saw the collision take place, and one waggon was turned on to its side and on to the down main line. I applied my brake, and then ran to the Midland goods junction and informed the signalman there that both lines were blocked at New Mills junction, and sent all the men I could to render assistance at the accident. I then returned to the junction, and found that the Manchester, Sheffield, and Lincolnshire engine had come into collision with the fifth waggon from the Midland tender, that three waggons were off the rails with all wheels, and one with one pair of wheels. My train was delayed at New Mills until 3.20 p.m., at which time we left for Heaton Mersey sidings, and returned from those sidings to Rowsley. I think my train was at a dead stand possibly two minutes before we commenced to set back from the down to the up main line. The speed of my train at the time of the collision was three or four miles an hour. I can hardly estimate the speed of the Manchester, Sheffield, and Lincolnshire train, but it was running "smartly" out of the tunnel. I cannot say whether or not the brakes were applied on this train. I think that when the Manchester, Sheffield, and Lincolnshire engine whistled it was four or five lengths inside the tunnel. It was at any rate very shortly before the collision. When my train was shunted, the signalman did not tell me along which line he was going to send us. I saw which way we were going.

Walter Upton, relief-signalman, states: I have been in the service of the Sheffield and Midland Joint Committee since November 29th last. I had been in the service of the Midland Railway Company 12 years, and a signalman about 10 years; at Ancoats junction about four years, and six years at Rowsley sidings and Rowsley station. On March 3rd I came on duty at 5 a.m. at Marple, to take duty as signalman at New Mills junction at 6 a.m., and to remain on duty at that junction until 4 p.m. On March 2nd I left Marple for Romiley junction by the 7.3 a.m. train for the purpose of learning the duties at that junction, and arrived at Marple on my return at 5.50 p.m. At 8.23 a.m. on March 3rd the signalman at New Mills goods junction gave me the "Be ready" signal for the 6.10 a.m. coal train from Rowsley to Hartford. At this time a Manchester, Sheffield, and Lincolnshire goods train from Hayfield to Peak Forest *viâ* New Mills was occupying the down main line, and until that train was clear of the down main line I did not give permission for the Rowsley train to approach. At 8.28 a.m. the Manchester, Sheffield, and Lincolnshire empty waggon train cleared the down main line, and I then gave permission to New Mills goods junction for the Rowsley coal train to approach my post. It arrived at 8.30 a.m. and was brought nearly to a stand at my down home-signal. I then lowered the signal and the train drew forward towards the starting-signal, and was brought to a stand with the guard's brake near my signal-box. At this time the Manchester, Sheffield, and Lincolnshire empty waggon train was leaving for Peak Forest, and as soon as it had passed over the junction I opened the points of the cross-over road and signalled the Midland train back, intending to reverse the facing-points and turn the Midland train on to the Hayfield branch. When the train was being set back I believed I had reversed the facing-points, and when the Midland engine had reached the up main line, believing that the train was going on to the Hayfield branch, I gave permission on the block telegraph at 8.37 a.m. for the 8 0 a.m. passenger train from Hayfield to approach. The collision took place at 8.38 a.m. I am a relief-signalman. I had never been in charge of the signal-box at New Mills junction before, but I was working in it for three days to learn the duties there. The Hayfield train was offered first at 8.35 a.m., but I did not accept it. I accepted it at 8.37 a.m. before it had been again offered. When I accepted it the engine of the Rowsley train was just through No. 8 points. I was quite under the impression that the Midland train was backing on to the loop of the Hayfield branch. If I had known that I had left the junction facing-points lying for the main line, and that the Midland train was backing across the junction I would not have accepted the Hayfield train on the branch. I am quite sure that I did not accept this train until I had closed the cross-over road points. I have no doubt at all about it. It did not seem to me to be above a minute before the collision occurred. As soon as I had accepted the Hayfield train I perceived that the Midland train was backing across the junction. I perceived this fact as I was going to pull off the signals for the Hayfield train. The signals were not lowered, and could not have been lowered with the points lying for the main line. It was a fair morning. I saw the Manchester, Sheffield, and Lincolnshire train coming out of the tunnel, and it seemed to be running pretty quick. I could see that the arm of my branch home-signal was at danger, and the repeater showed that my branch distant-signal was at danger. I have not had any complaint as to this signal not going properly to danger. I had not made any re-adjustment of the wire working this signal.

Henry Clement Dudley, inspector-guard, states: I have been in the service of the Manchester, Sheffield, and Lincolnshire Company 20 years, a passenger guard 10 years, and accustomed to run past New Mills all the time. On March 3rd I came on duty at 6.30 a.m. to work the 6.50 a.m. Manchester to Hayfield, 8.30 a.m. Hayfield to Manchester, 10.5 a.m. Manchester to Hadfield, return as passenger at 11.49 a.m., Hadfield to Manchester, due to arrive at Manchester at 12.25 p.m. and go off duty until 3.35 p.m., work the 3.35 p.m. Manchester to Hadfield and the 5.15 p.m. Hadfield to Manchester, due to arrive at Manchester at 6.5 p.m. and finish duty. On March 2nd I worked the same set of trains and left duty at 6.15 p.m. On March 3rd I left Hayfield at 8.30 a.m., right time. My train, on leaving Hayfield, consisted of eight-wheeled passenger tank-engine, (the four centre wheels coupled) running bunker first, and six passenger vehicles in the following order, viz.:—Third-class brake-carriage, third-class carriage, composite, first-class, third-class, and a third-class brake-carriage in the rear, in which I travelled. The four coupled wheels of the engine and all the vehicles on the train were fitted with the automatic vacuum-brake, which is capable of being applied from the engine and from each brake-compartment. The train was brought to a stand at Birch Vale station by the use of the continuous brake, which was again applied on approaching the signal-box at the Hayfield end of New Mills tunnel. This brake was in good working order. My train left Birch Vale at 8.33 a.m., right time. On approaching the New Mills tunnel end box the home and distant signals were at danger, the distant-signal remained at danger and the home-signal also remained at danger until the engine of my train was perhaps about 100 to 150 yards from it. I estimate the speed of my train at this time at possibly three miles an hour. Had the signal remained at danger the driver would have stopped at it, but it was lowered and we proceeded. When I sighted the tunnel end down starting-signal it was lowered, but the junction distant-signal, which is a lower arm on the same post, remained at danger. Just about the time my train was entering the tunnel

my driver sounded his whistle and directly afterwards he gave some short sharp whistles, I at once applied my hand-brake, and at the same time the continuous-brake was fully applied. At the time the collision took place I was standing up in my van and was thrown on to the floor, but was not injured. I estimate the speed of the train at the time of the collision at about three miles an hour. The vacuum-gauge in my brake-compartment showed about 18 inches of vacuum before the brake was applied on approaching the tunnel end box home-signal, and it showed about 18 inches when running between the tunnel end box and the tunnel. As soon as possible after the collision took place I left my van and went along the train. I think there were about 30 passengers in the train on leaving Birch Vale. Nearly the whole of the passengers had left the train before I reached them. There was a lady in a standing position in the leading compartment of the composite carriage, the third vehicle from the engine, and I noticed that her legs were held fast by the seat nearest the engine having been driven towards the back seat. I obtained assistance and had the lady removed as soon as possible. Dr. Keyworth was travelling in the train and he attended to her. I afterwards found that the leading and trailing wheels of my engine had left the rails, the four coupled wheels were on the rails. The brake-carriage next the engine was on the rails, but was buffer-locked with the engine and with the carriage next to it. The buffers at the rear of the second carriage had entered the third carriage, and driven the seat back. The third carriage had one pair of wheels off the rails. The third and fourth carriages were buffer-locked and the fourth carriage was partly off the rails. The fourth and fifth carriages were buffer-locked. The fifth and sixth carriages were on the rails. All the carriages were six-wheeled vehicles, and four out of the six wheels were braked. When the tunnel end home-signal was lowered my train was between the foot-bridge and the stop-block at the end of the siding. My driver sounded his whistle immediately upon entering the tunnel. When the brake was applied fully my van was about a coach length inside the tunnel, I should say. There was not the least rebound after the collision. None except the lady I have mentioned made any complaint of injury. So far as I can remember I have only been stopped about three times at this junction home-signal during the 10 years I have been working on the branch. The first whistle my driver gave seemed like a whistle for the signal. I think the brake was applied before the alarm whistle was given.

Samuel Household, engine-driver, states: I have been in the service of the Manchester, Sheffield, and Lincolnshire Company about 16 years, a driver about eight years, and accustomed to run past New Mills as driver and fireman during the whole of my service. On March 3rd I came on duty at 5.40 a.m. to work the 6.50 a.m. passenger train Manchester to Hayfield, 8.30 a.m. Hayfield to Manchester, 9.35 a.m. Manchester to Oldham, 11.10 a.m. Oldham to Manchester, 12 noon Manchester to Oldham, 1.25 p.m. Oldham to Manchester, due to arrive at Manchester at 1.54 p.m. On March 2nd I worked the same set of trains, and left duty at Gorton engine-shed at 3.40 p.m. We left Hayfield and Birch Vale at the booked time. My train consisted of eight-wheeled engine, with the four centre wheels coupled, and six passenger vehicles, the four coupled wheels of the engine and four out of the six wheels of all the passenger vehicles were fitted with the automatic vacuum-brake, which was workable from the foot-plate of the engine and from each brake-compartment. The train was brought to a stand at Birch Vale by the use of the brake, which was in good working order. On approaching the New Mills tunnel end signal-box the distant and home signals were at danger, but the home-signal was lowered when my train was about half way between the distant and home signals. When I sighted the tunnel end down starting-signal it was lowered, and the junction distant-signal, which is a lower arm on the post of the tunnel end box down starting-signal, was in a slanting position, and, as I had received no warning, I quite thought it was intended to be lowered. On sighting the junction home-signal I found it was at danger. I at once applied the continuous brake, opened the sand-valves, reversed the engine, and applied steam with the engine in reverse gear; but I was unable to bring my train to a stand before coming into collision with some waggons on a Midland coal train, which was crossing the line from Hayfield. I estimate the speed of the train on entering the tunnel at about 15 miles an hour, and at the time of the collision at about three miles an hour. My engine moved a very few feet forward after the collision before coming to a stand. I was not hurt. I was running bunker in front. I should say that I was 300 yards away from the tunnel end home-signal when it was lowered for me, my speed at that time being about 15 miles an hour. The junction distant-signal arm was not properly off, but I thought that it was meant to be off, because the other signals had been lowered so long before I reached the distant-signal. I think that we can see the junction home-signal when about half way through the tunnel. I was keeping a good look-out, and I believe that I saw this signal as soon as it was possible for me to do so. I think that my speed at that time was quite 15 miles an hour. I had shut off steam before reaching the tunnel end distant-signal, and I did not apply it again after releasing my brake when the tunnel end home-signal was lowered, but I let my train run on. After I had blown off my brake my gauge showed 20 inches of vacuum. I have never before been stopped at this junction home-signal with a passenger train. I sounded my whistle in the ordinary way when entering the tunnel. I did not whistle when I saw the home-signal at danger until I had applied my brake, and then I "popped." I saw the coal train crossing the junction almost at once after I saw that the home-signal was at danger. The steam from the Midland engine was drifting across the tunnel mouth, but I do not think that made much difference as to the view of the signal. It was not so clear that morning as it was this afternoon.

Tom Roebuck, fireman, states: I have been in the service of the Manchester, Sheffield, and Lincolnshire Company nine years, and a fireman six years. On March 3rd I came on duty at 5.40 a.m., to work as fireman with driver Houseman. I worked with driver Houseman on the same set of trains the previous day. On approaching the distant-signal, worked from the tunnel end box, it was at danger, and my train passed it in that position. The driver sounded his whistle, and when the train was between the distant and home-signals the home-signal was lowered, but I cannot exactly say how far the train was within the distant-signal when the home-signal was lowered. On sighting the tunnel end down starting-signal it was lowered, and I noticed that the junction distant-signal, which is a lower arm on the same post, was in a slanting position, and I concluded that it was intended to be lowered. When my train entered the tunnel I was standing near to the hand-brake, and the line being on a falling gradient, I gently applied it. Afterwards I noticed some coal waggons crossing the line my train was on, and in consequence of that I opened the sand-valves and applied the brake. The driver had previously applied the continuous-brake. I did not see the New Mills junction home-signal at the mouth of the tunnel until after the collision had taken place. My right knee and left shoulder were slightly bruised. My mate and I remained on the engine when the collision took place. I should say that the arm of the junction distant-signal was standing about half-way between the danger position and the usual "All right" position. My driver whistled in the ordinary way

when entering the tunnel, and he applied the brake before "popping."

William Waring, porter-signalman, states: I have been in the service of the Sheffield and Midland Joint Committee about 12 years, and in railway service about 27 years, as a signalman all the time. On March 3rd I came on duty at the New Mills tunnel end box at 5.26 a.m., to remain on duty as signalman until 12 noon, and then to act as porter on the New Mills station platform until 5 p.m. I performed the same duties the previous day, and left duty about 5 p.m. On March 3rd I received the "Be ready" signal for the 8.30 a.m. passenger train from Birch Vale at 8.30 a.m., and "Train on line" signal at 8.35 a.m. At this time I forwarded the "Be ready" signal to the junction, but it was refused, and was accepted at 8.38 a.m. The train passed my box at 8.38 a.m. I sent the "Train on line" signal at the same time, and also at the same time gave the "Line clear" signal to Birch Vale. My down distant, home, and starting signals remained at danger until the engine of the passenger train was, I think, about 20 yards from my home-signal. At this time the train was almost at a stand. I lowered the home-signal for the train to draw forward towards the starting-signal, and just as I did so the signalman at the junction accepted the "Be ready" signal, and I then lowered the starting-signal for the train to proceed to the junction. The disc-signal in my box, and the distant-signal arm on the post of my down starting-signal, which are worked from New Mills junction, remained in the danger position, and were not turned off before the collision took place. I noticed that the junction distant-signal arm remained at danger when I lowered my starting-signal. Shortly after the collision, Manchester, Sheffield, and Lincolnshire guard Dudley came to my signal-box and informed me what had taken place. I am certain that the Manchester, Sheffield, and Lincolnshire engine was in sight of my box before it was accepted from the junction, and before I lowered my signals for it. From where I stood in my box I could not see the engine until it had passed under the footbridge, outside the home-signal. According to rule I should not lower my signal when the junction distant-signal is at danger, until the approaching train has come to a dead stand. I usually attend strictly to this rule, but on this occasion the train did not come to a dead stand, although it had nearly done so.

Note.—The train-record book at the New Mills goods junction has the signals for the 6.10 a.m. coal train from Rowsley recorded as follows:—

	a.m.
Arrived - - - - -	8.26
"Is line clear?" asked from New Mills junction - - - -	8.29
"Train entering section" signal forwarded	8.29
"Train out of section" signal given -	8.32
"Train out of section" signal received -	8.34

Conclusion.

This collision, which would probably have been a very serious one if the Manchester Sheffield, and Lincolnshire train from Hayfield had not been fitted with a good continuous brake, occurred under the following circumstances:—

At 8.28 a.m. the signalman in New Mills junction cabin accepted from New Mills goods junction cabin the 6.10 a.m. down Midland coal train from Rowsley, which came off the down goods line at the goods junction, and arrived at New Mills junction at 8.30 a.m., coming to a stand short of the down starting-signal, with the guard's brake near to the signal-cabin. The signalman, in order to clear the down line for the 8.30 a.m. passenger train from Hayfield to Manchester, shunted the Midland train across on to the up line as soon as an up Manchester, Sheffield, and Lincolnshire empty waggon train for Peak Forest had cleared this line, intending to send it along the up line to Hayfield, and immediately the engine was through the cross-over road, he shut the points and accepted from New Mills tunnel end cabin at 8.37 a.m. the train from Hayfield, which had been offered to him, but not accepted, at 8.35 a.m.

Unfortunately he forgot, before accepting this train, to alter the position of the junction facing-points, so that the Midland train, instead of being turned off the main line on to the Hayfield branch, was pushed back along the up main line across the junction, and the fifth waggon from the engine, which was then propelling the train, was struck by the engine of the Hayfield train, the speed of both of the trains being at the time about three or four miles an hour.

Owing to the position of the junction-points it is certain that the signalman's statement that the levers working his home and distant signals for the train from Hayfield were at danger is correct, and although the driver and fireman of the Hayfield train, which had been brought nearly to a stand outside the tunnel end down home-signal, state that the New Mills down junction distant-signal was partially off, the evidence of the guard of the train and the signalman in the tunnel end cabin leaves no doubt in my mind that this signal, as well as the home-signal, was showing a proper danger-signal, while, even if the arm were "slanting," as the driver describes it, it would have been a doubtful signal, which should have been treated as a danger-signal. Having once passed this signal, either without seeing it, as was probably the case, or under the mistaken impression that it was showing an all right signal, there was not much chance of averting the collision, for the view of the home-signal is not above 120 yards, and on the falling gradient of 1 in 114 a train running at a speed of at least 15 miles an hour could hardly be expected to be brought to a complete stand in this distance, making allowance for the time necessarily occupied in applying the brake.

It is clear, therefore, that the collision was due principally to a most unaccountable mistake of the signalman in New Mills junction-cabin, Walter Upton, who is a relief

signalman bearing an excellent character, and who had been on duty at the time for rather over 3½ hours.

It would have been wiser if this man had kept the Midland coal train back at the goods junction on the down goods line until he was prepared to let it proceed past New Mills on its journey, but having allowed it to come forward, it showed a want of care upon his part in accepting the train from Hayfield before making sure that the Midland train was being backed up the branch, and not across the junction. He states that he did not accept the Hayfield train until after the engine of the Midland train was clear on to the up main line, and he had closed the cross-over road points; and if this be the case, part of the Midland train must actually have been across the junction at the time. I am unwilling to disbelieve this man's evidence, which was given in a very straightforward manner, but, nothwithstanding the steep gradients, it is certainly difficult to understand how the train from Hayfield, which was undoubtedly accepted before it reached New Mills tunnel end cabin home-signal, could have run a distance of nearly 800 yards in the time that the Midland engine took to push back its train for a distance of only about 60 yards.

In spite, however, of the signalman's error the collision would not have occurred if the driver of the Manchester, Sheffield, and Lincolnshire train had paid proper attention to the rules, and had reduced the speed of his train when approaching the distant-signal at danger, for if he had done so he would have been able to have stopped his train with the powerful continuous brake at his command short of the home-signal. This driver excuses himself for treating, what even he admits to have been a doubtful signal, as an "all right" signal, by stating that he did so because the signals at tunnel end had been lowered for so long a time before he reached them, but this is not a valid excuse, and I cannot avoid the conclusion that, seeing the upper arm on the same post, the advance starting-signal worked from tunnel end cabin, off, he somehow missed seeing the distant-signal arm at all. There is no doubt that it is very rare indeed for a passenger train to be stopped at the junction home-signal, and a train having to be stopped at this signal would almost certainly be cautioned at tunnel end cabin, and this makes it all the more probable that the driver took it for granted that it was all clear for him to proceed when he saw the tunnel end advance starting-signal off as soon as he came within view of it.

Driver Household and his fireman had at the time of the collision been on duty for three hours.

The signalman in tunnel end cabin, who had at the time been on duty for about 3½ hours, did not act strictly in accordance with the rules, for he admits that he did not bring the passenger train to a dead stand before lowering his home-signal, as he ought to have done, but, while I believe that his estimate of the distance of the engine of the Hayfield train from his home-signal when he took the signal off is too low, I do not think that this distance can have exceeded 100 yards, and it is admitted that the train was under complete control. Nevertheless he should be more careful in future to obey to the letter the rules issued for his guidance.

The approach to New Mills junction both from the branch and from the direction of Derby on the main line is very awkward, being in both cases through tunnels on falling gradients, and on curves so that there is not a good view of the junction home-signals, and drivers should be warned to exercise the greatest possible caution on this part of the line; while under no circumstances should trains be allowed to approach this junction under the "Section clear but station or junction blocked" signal. It should be observed, although the fact has nothing to do with the cause of the collision, that the driver and fireman of the Midland train had, on the day before the occurrence, been on duty for about 13 hours.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

(Signed) F. A. Marindin,
Major, R.E.

APPENDIX.

PARTICULARS of DAMAGE done to SIDE-TANK ENGINE 579, and CARRIAGES forming the 8.30 a.m. PASSENGER TRAIN, HAYFIELD to MANCHESTER.

Engine 579.—Bunker end damaged and requires patching in two places; four lamp-stands broken; angle-iron, foot-plate, and right-hand corner buffer-plate bent; four iron-pipes for heating apparatus broken; right-hand leading buffer-spring broken.

Manchester, Sheffield, and Lincolnshire brake third 191.—One headstock broken; two buffer-castings broken; end pipes broken; buffer-rods bent and one short step broken.

Manchester, Sheffield, and Lincolnshire third 952.—One headstock damaged; one headstock broken; two corner-pillars and end panels damaged; buffer-rod bent and step board broken.

Manchester, Sheffield, and Lincolnshire composite 3.—Two headstocks, one lamp-iron, one end, two end-quarters, and three doors broken; roof broken; end-pipes broken; three door-lights broken; one quarter light broken; one sole-knee broken; buffer-rods bent and body badly shaken.

Manchester, Sheffield, and Lincolnshire first 1198.—One buffer-casting and headstock broken.

Manchester, Sheffield, and Lincolnshire third 190.—One end staved in; end-bar broken; end-step bent; buffer-rods bent and headstock shaken.

Manchester, Sheffield, and Lincolnshire brake third 862.—One headstock broken.

PARTICULARS of DAMAGE to ROLLING-STOCK on MIDLAND GOODS TRAIN.

Midland waggon 56,334.—Two headstocks, one sole, one side-rail, three end-pillars, two top-rails, 10 end-planks, 10 quarter-planks, two diagonals, one body-knee, two axle-boxes, &c., broken; buffer-rods, axle-guards, and brake-work badly bent.

Midland waggon 68,239.—Two soles, two headstocks, two end-pillars, one top-rail, five end-planks, one diagonal, two buffer-castings, one buffer-rod, three axle-boxes, three buffer-shoes, one body-knee, three bearing spring-shoes, two axle-guards, &c., broken; one pair of wheels, spring, &c., torn from under; one axle, brake-work, iron-work bent, &c.

Midland waggon 88,202.—Three end-planks, one corner-plate, one bearing spring-top plate broken; one buffer-end damaged.

W. Cheetham (Stockport) waggon 44.—Both pairs of wheels, axle-boxes, bearing-springs, axle-guards, brake-work, &c., torn from under; the body-frame and iron-work badly broken.

Lomas Bros. (Stockport) waggon 5.—One side-rail, one door-block, one quarter-plank, three side-door planks, one door-band, all broken.

The Midland engine was not damaged.

PARTICULARS of DAMAGE to PERMANENT-WAY.

Five common and three crossing-chairs broken; two 85-lb. rails and one 80-lb. rail broken; one sleeper broken and the road knocked a little out of line.

Printed copies of the above Report were sent to the Manchester, Sheffield, and Lincolnshire, Midland, and Sheffield and Midland Railway Companies on the 10th April.

RETURNS

OF

ACCIDENTS AND CASUALTIES

AS REPORTED TO THE BOARD OF TRADE BY THE SEVERAL RAILWAY COMPANIES IN THE UNITED KINGDOM,

During the Six Months ending 30th June 1893,

In pursuance of the Regulation of Railways Act (1871), 34 & 35 Vict. cap. 78;

TOGETHER WITH

REPORTS OF THE INSPECTING OFFICERS OF THE RAILWAY DEPARTMENT TO THE BOARD OF TRADE

UPON

CERTAIN ACCIDENTS

Which were inquired into.

Presented to both Houses of Parliament by Command of Her Majesty.

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TABLE OF CONTENTS.

Page

SUMMARY of ACCIDENTS and CASUALTIES reported to the BOARD of TRADE during the Six Months ending 30th June 1893 - - - - - - - 3

TABLES:

No. 1. General Total.—Number of Persons reported as killed or injured on the Railways of the United Kingdom, distinguishing between Passengers, Servants of the Companies or of Contractors, and other Persons; and distinguishing also in the case of the two former Classes between Accidents caused by accidents to trains, rolling-stock, permanent-way, &c., and Accidents happening otherwise - - - - - - - - - 7

No. 2. Number of Persons reported as killed or injured in the United Kingdom, by the travelling of trains or the movement of vehicles used exclusively upon Railways, distinguishing between Passengers, Servants of Railway Companies, and other Persons; and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury - 8

No. 3. Accidents to Trains, Rolling-Stock, Permanent-Way, &c. on the Railways in the United Kingdom, distinguishing the different Classes of Accidents, and the Number of Passengers and others, and of Servants of Railway Companies, killed or injured in each Class of Accident - 9

No. 4. Accidents to Trains, Rolling-Stock, Permanent-Way, &c. on the Railways in the United Kingdom, distinguishing the different Classes of Accidents, the different Railways on which the same have occurred, and the Number of Passengers and others, and of Servants of Railway Companies, killed or injured on each Railway by those Accidents - - - 10

No. 5. Number of Servants of Railway Companies and Contractors reported as killed or injured on the Railways in the United Kingdom, by the travelling of trains or the movement of vehicles used exclusively upon Railways, distinguishing the Number which have occurred on each Railway or System of Railway, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury - - - - - 14

No. 6. Table showing the different occupations of Servants of Railway Companies and Contractors who were killed or injured, and classifying their injuries as far as practicable - 18

No. 7. Number of Persons reported as having been killed or injured whilst upon the Companies' premises, by accidents in which the movement of vehicles used exclusively upon Railways was not concerned, distinguishing between Passengers, Servants of Companies, and other Persons; and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury - - - - - - - - 19

REPORTS ON ACCIDENTS INQUIRED INTO - - - - - - 21

Summary of Accidents and Casualties which have been reported to the Board of Trade as having occurred upon the Railways in the United Kingdom during the Six Months ending 30th June 1893.

I.—Accidents to Trains, Rolling-Stock, Permanent-Way, &c.

Accidents to trains, rolling-stock, permanent-way, &c. caused the death of 6 persons and injury to 235 persons, viz. :—

	Killed.	Injured.	*Total for the corresponding Period in 1892.*	
			Killed.	*Injured.*
Passengers	1	202	*11*	*282*
Servants of companies	5	33	*3*	*42*
Total	6	235	*14*	*324*

During the six months there were reported 12 collisions between passenger trains or parts of passenger trains, by which 43 passengers and 1 servant were injured; 16 collisions between passenger trains and goods or mineral trains, &c., by which 47 passengers and 5 servants were injured; 6 collisions between goods trains or parts of goods trains, by which 7 servants were injured; 1 case of a train coming in contact with projections from other trains travelling on parallel lines, by which 1 servant was killed and 3 passengers were injured; 26 cases of passenger trains or parts of passenger trains leaving the rails, by which 3 servants were killed and 19 passengers and 2 servants were injured; 8 cases of goods trains or parts of goods trains leaving the rails, by which 1 servant was killed and 2 were injured; 3 cases of trains or engines travelling in the wrong direction through points, by which 1 passenger and 1 servant were injured; 14 cases of trains running into stations or sidings at too high a speed, by which 78 passengers and 3 servants were injured; 70 cases of trains running over cattle* or other obstructions on the line, by which 5 passengers and other persons were injured; 22 cases of trains running through gates at level crossings, by which 1 passenger was killed and 1 passenger and 1 servant were injured; 5 cases of the failure of machinery, springs, &c., of engines, by which 2 servants were injured; 294 failures of tyres, by which 2 passengers and 1 servant were injured; 9 failures of couplings, by which 5 servants were injured; and 2 other accidents by which 3 passengers and 3 servants were injured.

The following cases were also reported, but they involved no personal injury:—90 failures of axles; 146 failures of rails; 2 failures of tunnels, &c.; 1 case of the flooding of a portion of the permanent way; 4 slips in cuttings or embankments; 2 cases of fires in trains; and 4 fires at stations.

Of the 294 tyres which failed, 12 were engine-tyres, 6 were tender-tyres, 2 were coach-tyres, 5 were van-tyres, and 269 were waggon-tyres; of the waggons, 236 belonged to owners other than the Railway Companies; 201 tyres were made of iron, 92 of steel, and in one case the material was not stated; 5 of the tyres were fastened to the wheels by Mansell's patent method, 1 of which left its wheel when it failed; 5 by Gibson's patent method; 244 by bolts or rivets, 4 of which left their wheels when they failed; 34 by other methods, 2 of which left their wheels when they failed; and 6 by methods which were not stated; 28 tyres broke at rivet-holes, 69 in the solid, and 197 split longitudinally or bulged.

* During the six months, 21 horses, 11 beasts and cows, 49 sheep, 2 donkeys and 1 pig were run over and killed, and 1 beast 3 sheep were injured.

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Of the 90 axles which failed, 51 were engine axles, viz., 40 crank or driving, and 11 leading or trailing; 8 were tender axles, 1 was a coach axle, and 30 were waggon axles; of the waggons, 10 belonged to owners other than the Railway Companies. Of the 40 crank or driving axles, 14 were made of iron and 26 of steel. The average mileage of 13 crank or driving axles made of iron was 274,469 miles, and of 25 crank or driving axles made of steel 330,756 miles.

Of the 153 rails which broke, 52 were double-headed, 93 were single-headed, 1 was of the bridge pattern, and 7 were Vignoles' rails; of the double-headed rails 33 had been turned; 10 rails were made of iron and 143 of steel.

II.—Accidents to Passengers from Causes other than Accidents to Trains, Rolling-Stock, Permanent-Way, &c., including Accidents from their own want of Caution or Misconduct; Accidents to Persons passing over Level-Crossings; Trespassers; and Others.

Of the 246 persons killed and 455 injured in this division, 42 of the killed and 331 of the injured were passengers. Of these 11 were killed and 24 injured by falling between carriages and platforms, viz., 6 killed and 13 injured when getting into, and 5 killed and 11 injured when alighting from, trains; 4 were killed and 201 injured by falling on to platforms, ballast, &c., viz., 3 killed and 24 injured when getting into, and 1 killed and 177 injured when alighting from, trains; 11 were killed and 8 injured whilst passing over the line at stations; 1 was killed and 28 injured by the closing of carriage doors; 4 were killed and 17 injured by falling out of carriages during the travelling of trains; and 11 were killed and 53 injured from other causes. 25 persons were killed and 12 injured whilst passing over railways at level-crossings, viz., 16 killed and 8 injured at public level-crossings, 6 killed and 2 injured at occupation-crossings, and 3 killed and 2 injured at foot-crossings. 118 persons were killed and 71 injured when trespassing on the railways; 45 persons committed suicide on railways; and of other persons not specifically classed, but mostly private people having business on the companies' premises, 16 were killed and 41 injured.

III.—Accidents to Servants in the Employ of Railway Companies or Contractors, caused by the Travelling of Trains or the Movement of Vehicles used exclusively upon Railways.

During the three months there were 221 servants of companies or contractors reported as having been killed and 1,295 injured, in addition to those included in Division I. Of these 5 were killed and 156 injured whilst coupling or uncoupling vehicles; 5 were killed and 13 injured by coming in contact, whilst riding on vehicles during shunting, with other vehicles, &c. standing on adjacent lines; 14 were injured whilst passing over or standing upon buffers during shunting; 7 were killed and 101 injured in getting on or off, or by falling off engines, waggons, &c. during shunting; 2 were killed and 85 injured whilst breaking, spragging, or chocking wheels; 1 was killed and 14 injured whilst attending to ground-points, marshalling trains, &c.; 11 were killed and 128 injured whilst moving vehicles by capstans, turn-tables, props, &c. during shunting, and 38 were killed and 241 injured by various other accidents during shunting operations; 22 were injured by falling off engines, &c. during the travelling of trains; 1 was killed and 18 injured by coming in contact with over-bridges or erections on the sides of the line during the travelling of trains; 3 were killed and 39 injured whilst getting on or off engines, vans, &c., during the travelling of trains; 4 were killed and 213 injured whilst attending to, or by the failure of, machinery, &c. of engines in steam; 37 were killed and 41 injured whilst working on the permanent-way, sidings, &c.; 3 were killed and 2 injured whilst attending to level-crossing gates; 70 were killed and 90 injured whilst walking, crossing, or standing on the line on duty; 6 were killed and 20 injured by being caught between vehicles; 8 were killed and 22 injured by falling or being caught between trains and platforms, walls, &c.; 18 were killed and 6 injured whilst walking, &c. on the line on the way home or to work; and 2 were killed and 70 injured from various other causes.

Altogether, the number of persons killed and injured on railways in the United Kingdom in the course of public traffic, during the six months ending 30th June 1893, as reported to the Board of Trade, was as follows :—

	Killed.	Injured.	*Total for the corresponding Period in 1892.*		Increase.		Decrease.	
			Killed.	*Injured.*	Killed.	Injured.	Killed.	Injured.
Passengers :								
From accidents to trains, rolling-stock, permanent-way, &c.	1	202	*11*	*282*	—	—	10	80
By accidents from other causes -	42	331	*55*	*342*	—	—	13	11
Servants of companies or contractors :*								
From accidents to trains, rolling-stock, permanent-way, &c.	5	33	*3*	*42*	2	—	—	9
By accidents from other causes -	221	1,295	*249*	*1,269*	—	26	28	—
Persons passing over railways at level-crossings.	25	12	*38*	*8*	—	4	13	—
Trespassers (including suicides) - -	163	71	*165*	*55*	—	16	2	—
Other persons not coming in above classification.	16	41	*24*	*36*	—	5	8	—
Total - - - - -	473	1,985	*545*	*2,034*	—	—	72	49

* Of contractors' servants 7 were killed and 8 injured.

Note.—In addition to the above, the Railway Companies have reported to the Board of Trade, in pursuance of the 6th Section of the Regulation of Railways Act, 1871, the following accidents which occurred upon their premises, but in which the movement of vehicles used exclusively upon railways was not concerned, namely :—3 passengers killed and 69 injured whilst ascending or descending steps at stations; 19 injured by being struck by barrows, falling over packages, &c. on station platforms; 17 injured by falling off platforms; and 2 killed and 33 injured from other causes. Of servants of companies or contractors, 5 killed and 656 injured whilst loading, unloading, or sheeting waggons; 92 injured whilst moving or carrying goods in warehouses, &c.; 1 killed and 68 injured whilst working at cranes or capstans; 2 killed and 83 injured by the falling of waggon-doors, lamps, bales of goods, &c.; 3 killed and 146 injured by falling off, or when getting on or off, stationary engines or vehicles; 7 killed and 211 injured by falling off platforms, ladders, scaffolds, &c.; 3 killed and 169 injured by stumbling whilst walking on the line or platforms; 1 killed and 117 injured whilst attending to stationary engines in sheds; 1 killed and 27 injured by being trampled on or kicked by horses; 7 killed and 330 injured whilst working on the line or in sidings; and 4 killed and 200 injured from various other causes. Of other persons, most of whom were transacting business on the companies' premises, 12 were killed and 80 injured—making a total in this class of accidents of 51 persons killed and 2,317 injured.

Thus the total number of personal accidents reported to the Board of Trade by the several Railway Companies during the six months amounts to 524 persons killed and 4,302 injured.

TABLE No. 1.

GENERAL TOTAL.

NUMBER of PERSONS reported, during the Six Months ending 30th June 1893, as KILLED or INJURED on the RAILWAYS of the UNITED KINGDOM, distinguishing between PASSENGERS, SERVANTS of the COMPANIES or of CONTRACTORS, and OTHER PERSONS; and distinguishing also in the case of the Two former Classes between ACCIDENTS caused by ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c., and ACCIDENTS happening otherwise.

	England and Wales.		Scotland.		Ireland.		United Kingdom.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS:—								
From accidents to trains, rolling-stock, permanent-way, &c. -	1	177	–	11	–	14	1	202
By accidents from other causes, including accidents from their own want of caution or misconduct - - -	37	306	2	23	3	2	42	331
SERVANTS:—								
From accidents to trains, rolling-stock, permanent-way, &c. -	1	26	1	6	3	1	5	33
By accidents from other causes, including accidents from their own want of caution or misconduct - - -	182	1,127	34	153	5	15	221	1,295
OTHER PERSONS:—								
Whilst passing over railways at level-crossings - -	21	10	3	2	1	–	25	12
Trespassers - - -	92	48	22	22	4	1	118	71
Suicides - - - -	35	–	9	–	1	–	45	–
Miscellaneous, not included in either of the above - -	12	35	2	6	2	–	16	41
TOTAL - -	381	1,729	73	223	19	33	473	1,985

N.B.—The Board of Trade state the cause of accident as returned by the Companies, but do not guarantee or otherwise adopt the statement, except in cases where an official inquiry has been held.

TABLE No. 2.

NUMBER of PERSONS reported, during the Six Months ending 30th June 1893, as KILLED or INJURED in the UNITED KINGDOM by the TRAVELLING of TRAINS or the MOVEMENT of VEHICLES used exclusively upon RAILWAYS, distinguishing between PASSENGERS, SERVANTS of RAILWAY COMPANIES, and OTHER PERSONS, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury.

	England and Wales.		Scotland.		Ireland.		United Kingdom.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS:—								
From accidents to trains, &c., *see Table No. 3*	1	177	–	11	–	14	1	202
From falling between trains and platforms	8	19	1	5	2	–	11	24
From falling on to the platform, ballast, &c. when getting into or out of trains	4	192	–	9	–	–	4	201
Whilst crossing the line at stations	10	8	1	–	–	–	11	8
By the closing of carriage doors	1	26	–	2	–	–	1	28
From falling out of carriages during the travelling of trains	3	15	–	2	1	–	4	17
By other accidents	11	46	–	5	–	2	11	53
TOTAL	38	483	2	34	3	16	43	533
SERVANTS:—								
From accidents to trains, &c., *see Table No. 3*	1	26	1	6	3	1	5	33
Whilst coupling or uncoupling vehicles	4	126	1	26	–	4	5	156
By coming in contact, whilst riding on vehicles during shunting, with other vehicles, &c. standing on adjacent lines	4	10	1	3	–	–	5	13
Whilst passing over or standing upon buffers during shunting	–	5	–	9	–	–	–	14
When getting on or off, or falling off, engines, waggons, &c. during shunting	5	82	2	17	–	2	7	101
Whilst braking, spragging, or chocking wheels	2	75	–	10	–	–	2	85
Whilst attending to ground-points, marshalling trains, &c.	1	10	–	3	–	1	1	14
Whilst moving vehicles by capstans, turn-tables, props, &c. during shunting	8	118	3	9	–	1	11	128
By other accidents during shunting operations, not included in the preceding	37	214	1	26	–	1	38	241
From falling off engines, &c. during the travelling of trains	–	15	–	6	–	1	–	22
By coming in contact with over-bridges or erections on the sides of the line during the travelling of trains	1	11	–	6	–	1	1	18
When getting on or off engines, vans, &c. during the travelling of trains	2	34	1	4	–	1	3	39
Whilst attending to, or by the failure of, machinery, &c. of engines in steam	4	205	–	8	–	–	4	213
Whilst working on the permanent-way, sidings, &c.	33	32	4	8	–	1	37	41
Whilst attending to gates at level-crossings	1	2	1	–	1	–	3	2
Whilst walking, crossing, or standing on the line on duty	54	80	14	10	2	–	70	90
From being caught between vehicles	6	17	–	2	–	1	6	20
From falling or being caught between trains and platforms, walls, &c.	6	19	1	3	1	–	8	22
Whilst walking, &c. along the line on the way home or to work	13	6	4	–	1	–	18	6
Miscellaneous	1	66	1	3	–	1	2	70
TOTAL	183	1,153	35	159	8	16	226	1,328
OTHER PERSONS:—								
Whilst passing over railways at level-crossings	21	10	3	2	1	–	25	12
Trespassers	92	48	22	22	4	1	118	71
Suicides	35	–	9	–	1	–	45	–
Miscellaneous	12	35	2	6	2	–	16	41
TOTAL	160	93	36	30	8	1	204	124
SUMMARY:—								
Passengers	38	483	2	34	3	16	43	533
Servants	183	1,153	35	159	8	16	226	1,328
Other persons	160	93	36	30	8	1	204	124
TOTAL ALL CLASSES	381	1,729	73	223	19	33	473	1,985

TABLE No. 3.

CCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c. reported, during the Six Months ending 30th June 189
as having occurred on the RAILWAYS in the UNITED KINGDOM, distinguishing the different Classes of Accident, and th
Number of Passengers and others, and of Servants of Railway Companies, KILLED or INJURED in each Class of Accident.

—	NUMBER OF CASES.				NUMBER OF PASSENGERS AND OTHERS.								NUMBER OF SERVANTS.							
	England and Wales.	Scotland.	Ireland.	United Kingdom.	England and Wales.		Scotland.		Ireland.		United Kingdom.		England and Wales.		Scotland.		Ireland.		United Kingdom	
					Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
lisions between passenger rains or parts of passenger rains	12	–	–	12	–	43	–	–	–	–	–	43	–	1	–	–	–	–	–	1
lisions between passenger rains and goods or mineral rains, engines, and vehicles tanding foul of the line	14	1	1	16	–	44	–	3	–	–	–	47	–	5	–	–	–	–	–	5
lisions between goods trains r parts of goods trains	5	1	–	6	–	–	–	–	–	–	–	–	–	6	–	1	–	–	–	7
ins coming in contact with rojections from other trains ravelling on parallel lines	1	–	–	1	–	3	–	–	–	–	–	3	1	–	–	–	–	–	1	–
senger trains or parts of assenger trains leaving the ails	17	4	5	26	–	4	–	1	–	14	–	19	–	2	–	–	3	–	3	2
ds trains or parts of goods ains, engines, &c. leaving ie rails	4	2	2	8	–	–	–	–	–	–	–	–	–	–	1	1	–	1	1	2
ns or engines travelling in ie wrong direction through oints	2	1	–	3	–	1	–	–	–	–	–	1	–	–	–	1	–	–	–	1
ins running into stations sidings at too high a peed	13	1	–	14	–	72	–	6	–	–	–	78	–	3	–	–	–	–	–	3
ns running over cattle or her obstructions on the line	45	19	6	70	–	4	–	1	–	–	–	5	–	–	–	–	–	–	–	–
ins running through gates level-crossings	22	–	–	22	1	1	–	–	–	–	1	1	–	1	–	–	–	–	–	1
bursting of boilers or bes, &c. of engines	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
failure of machinery, rings, &c. of engines	4	–	1	5	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	2
failure of tyres	277	16	1	294	–	2	–	–	–	–	–	2	–	–	–	1	–	–	–	1
„ wheels	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ axles	61	26	3	90	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ brake apparatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ couplings	8	1	–	9	–	–	–	–	–	–	–	–	–	3	–	2	–	–	–	5
„ ropes used in working inclines	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ tunnels, bridges, viaducts, culverts, &c.	1	1	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
en rails	121	21	4	146	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
flooding of portions of rmanent-way	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
in cuttings or embank-nts	4	–	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
in trains	1	1	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
at stations or involving ury to bridges or viaducts	4	–	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
r accidents	1	1	–	2	–	3	–	–	–	–	–	3	–	3	–	–	–	–	–	3
TOTAL					1	177	–	11	–	14	1	202	1	26	1	6	3	1	5	33

TABLE No. 4.

ACCIDENTS TO TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c. on the RAILWAYS in the UNITED KINGDOM, reported
RAILWAYS on which the same have occurred, and the Number of Passengers and others, and of

NAME OF COMPANY.	Collisions between passenger trains or parts of passenger trains.	Collisions between passenger trains and goods or mineral trains, engines, &c.	Collisions between goods trains or parts of goods trains.	Trains coming in contact with projections from other trains travelling on parallel lines.	Passenger trains or parts of passenger trains leaving the rails.	Goods trains or parts of goods trains, engines, &c. leaving the rails.	Trains or engines travelling in the wrong direction through points.	Trains running into stations or sidings at too high a speed.	Trains running over cattle or other obstructions on the line.	Trains running through gates at level-crossings.	The bursting of boilers or tubes, &c. of engines.	The failure of machinery, springs, &c. of engines.	The failure of tyres.
ENGLAND AND WALES.													
Brecon and Merthyr Junction	–	–	–	–	–	–	–	–	–	–	–	–	–
Cambrian	–	–	–	–	–	–	–	–	–	–	–	–	–
Festiniog	–	–	–	–	–	–	–	–	–	–	–	–	–
Furness	–	–	–	–	–	–	–	–	–	–	–	–	–
Great Eastern	1	–	–	–	8	–	1	1	5	5	–	1	9
Great Northern	–	1	1	–	–	–	–	1	–	–	–	–	2
Great Western	1	1	–	–	–	–	1	1	7	8	–	2	8
Hull, Barnsley, and West Riding Junction.	–	–	–	–	1	–	–	–	–	–	–	1	–
Isle of Wight	–	–	–	–	–	1	–	–	–	–	–	–	–
Lancashire and Yorkshire	3	3	2	–	–	–	–	1	7	–	–	–	1
Liverpool Overhead	–	–	–	–	–	–	–	1	–	–	–	–	–
London and North-Western	–	2	–	1	1	1	–	4	–	1	–	–	6
London and North-Western and Great Western.	–	–	–	–	1	–	–	–	–	–	–	–	–
London and South-Western	2	2	1	–	2	–	–	1	3	4	–	–	4
London, Brighton, and South Coast.	1	1	–	–	–	–	–	1	2	1	–	–	1
London, Chatham, and Dover	–	1	–	–	–	–	–	–	–	–	–	–	–
Manchester, Sheffield, and Lincolnshire.	–	–	1	–	–	–	–	1	1	–	–	–	1
Maryport and Carlisle	–	–	–	–	–	–	–	–	–	–	–	–	–
Metropolitan	–	–	–	–	–	–	–	1	–	–	–	–	–
Midland	–	–	–	–	–	–	–	–	–	–	–	–	4
Neath and Brecon	–	–	–	–	1	2	–	–	1	–	–	–	–
North-Eastern	1	–	–	–	2	–	–	–	18	2	–	–	3
North and South-Western Junction.	–	–	–	–	–	–	–	–	1	–	–	–	–
North London	–	–	–	–	–	–	–	–	–	–	–	–	–
North Staffordshire	–	–	–	–	–	–	–	–	–	–	–	–	2
Sheffield and Midland Joint	1	1	–	–	1	–	–	–	–	–	–	–	–
South Eastern	2	2	–	–	–	–	–	–	–	1	–	–	1
West Lancashire	–	–	–	–	–	–	–	–	–	–	–	–	–
Private Owners	–	–	–	–	–	–	–	–	–	–	–	–	235
TOTAL, ENGLAND	12	14	5	1	17	4	2	13	45	22	–	4	277

TABLE No. 4.

ring the Six Months ending 30th June 1893, distinguishing the different CLASSES of ACCIDENTS, the different e Servants of Railway Companies, KILLED or INJURED on each Railway by those Accidents.

The failure of wheels.	The failure of axles.	The failure of brake apparatus.	The failure of couplings.	The failure of ropes used in working inclines.	The failure of tunnels, bridges, viaducts, or culverts.	Broken rails.	The flooding of portions of permanent-way.	Slips in cuttings or embankments.	Fire in trains.	Fire at stations or involving injury to bridges or viaducts.	Other accidents.	Number of Passengers and others.		Number of Servants.		Total all Classes.	
												Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	8	–	–	–	–	–	–	–	–	–	–	–
–	2	–	–	–	–	1	1	–	–	–	–	–	7	–	1	–	8
–	–	–	–	–	–	10	–	–	–	–	–	–	5	–	2	–	7
–	8	–	3	–	1	8	–	2	–	4	–	–	6	–	4	–	10
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	1	–	–	7	–	–	–	–	–	–	19	–	5	–	24
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	19	–	–	–	–	18	–	–	1	–	–	–	49	1	2	1	51
–	–	–	–	–	–	2	–	–	–	–	–	–	1	–	–	–	1
–	1	–	2	–	–	13	–	1	–	–	–	–	9	–	3	–	12
–	2	–	2	–	–	10	–	–	–	–	–	–	3	–	1	–	4
–	1	–	–	–	–	11	–	–	–	–	–	–	–	–	1	–	1
–	–	–	–	–	–	3	–	–	–	–	–	–	7	–	1	–	8
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	11	–	–	–	–	–	–	31	–	2	–	33
–	6	–	–	–	–	6	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–
–	12	–	–	–	–	10	–	–	–	–	1	–	31	–	3	–	34
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	4	–	1	–	5
–	–	–	–	–	–	–	–	–	–	–	–	1	5	–	–	1	5
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	61	–	8	–	1	121	1	4	1	4	1	1	177	1	26	2	203

[Continued on next page.

TABLE No. 4.—Number of Accidents to Tra

NAME OF COMPANY.	Collisions between passenger trains or parts of passenger trains.	Collisions between passenger trains and goods or mineral trains, engines, &c.	Collisions between goods trains or parts of goods trains.	Trains coming in contact with projections from other trains travelling on parallel lines.	Passenger trains or parts of passenger trains leaving the rails.	Goods trains or parts of goods trains, engines, &c. leaving the rails.	Trains or engines travelling in the wrong direction through points.	Trains running into stations or sidings at too high a speed.	Trains running over cattle or other obstructions on the line.	Trains running through gates at level-crossings.	The bursting of boilers or tubes, &c. of engines.	The failure of machinery, springs, &c. of engines.	Th fail of ty
SCOTLAND.													
Aberdeen Joint Station	–	–	–	–	1	–	–	–	–	–	–	–	–
Caledonian	–	–	–	–	–	–	–	–	14	–	–	–	7
Dundee and Arbroath	–	–	–	–	–	–	–	–	–	–	–	–	–
Glasgow and South-Western	–	–	1	–	–	–	–	1	–	–	–	–	–
Great North of Scotland	–	–	–	–	–	–	–	–	–	–	–	–	2
Highland	–	–	–	–	–	–	–	–	1	–	–	–	1
North British	–	1	–	–	2	1	1	–	4	–	–	–	5
Portpatrick and Wigtownshire	–	–	–	–	1	1	–	–	–	–	–	–	–
Private Owners	–	–	–	–	–	–	–	–	–	–	–	–	1
TOTAL, SCOTLAND	–	1	1	–	4	2	1	1	19	–	–	–	16
IRELAND.													
Belfast and Northern Counties	–	1	–	–	–	–	–	–	–	–	–	–	–
Bessbrook and Newry	–	–	–	–	2	2	–	–	–	–	–	–	–
Cavan, Leitrim, and Roscommon.	–	–	–	–	1	–	–	–	1	–	–	–	–
Cork, Blackrock and Passage	–	–	–	–	–	–	–	–	–	–	–	–	–
Dublin, Wicklow, and Wexford	–	–	–	–	–	–	–	–	–	–	–	–	–
Great Northern of Ireland	–	–	–	–	–	–	–	–	–	–	–	1	–
Great Southern and Western	–	–	–	–	1	–	–	–	–	–	–	–	–
Midland Great Western	–	–	–	–	–	–	–	–	–	–	–	–	1
Tralee and Dingle	–	–	–	–	1	–	–	–	–	–	–	–	–
Waterford and Central Ireland	–	–	–	–	–	–	–	–	1	–	–	–	–
Waterford and Limerick	–	–	–	–	–	–	–	–	4	–	–	–	
TOTAL, IRELAND	–	1	–	–	5	2	–	–	6	–	–	1	1
TOTAL, UNITED KINGDOM	12	16	6	1	26	8	3	14	70	22	–	5	294

lling-Stock, Permanent-Way, &c.—*continued.*

The ilure of heels.	The failure of axles.	The failure of brake appa-ratus.	The failure of coup-lings.	The failure of ropes used in working inclines.	The failure of tunnels, bridges, viaducts, or culverts.	Broken rails.	The flooding of portions of per-manent-way.	Slips in cuttings or embank-ments.	Fire in trains.	Fire at stations or in-volving injury to bridges or via-ducts.	Other acci-dents.	Number of Passengers and others.		Number of Servants.		Total all Classes.	
												Killed.	In-jured.	Killed.	In-jured.	Killed.	In-jured.
–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1
–	12	–	–	–	–	11	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	1	–	1	–	6	–	1	–	7
–	1	–	1	–	–	–	–	–	–	–	–	–	–	–	2	–	2
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1
–	9	–	–	–	1	10	–	–	–	–	–	–	3	1	2	1	5
–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1
–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	26	–	1	–	1	21	–	–	1	–	1	–	11	1	6	1	17
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	3	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	14	3	–	3	14
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	3	–	–	–	–	4	–	–	–	–	–	–	14	3	1	3	15
1	90	–	9	–	2	146	1	4	2	4	2	1	202	5	33	6	235

TABLE No. 5.

NUMBER of SERVANTS of RAILWAY COMPANIES and CONTRACTORS reported, during the Six Months ending 30
used exclusively upon RAILWAYS, distinguishing the Number which have occurred on each Railway or System

NAME OF COMPANY.	From accidents to trains, &c. *See* Table No. 4.		Whilst coupling or uncoupling vehicles.		By coming in contact whilst riding on vehicles during shunting with other vehicles, &c. standing on adjacent lines.		Whilst passing over, or standing upon, buffers during shunting.		When getting on or off, or falling off, engines, waggons, &c. during shunting.		Whilst braking, spragging, or chocking wheels.		Whilst attending to ground-points, marshalling trains, &c.		Whilst moving vehicles by capstans, turntables, props, &c. during shunting.		By other accident during shunting operation not includ in the preceding	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Inj jur
ENGLAND AND WALES.																		
Barry	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Brecon and Merthyr Junction	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Cambrian	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Cheshire Lines	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2	–
Furness	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–
Great Eastern	–	1	–	2	1	1	–	–	–	1	–	1	–	–	2	4	1	2
Great Northern	–	2	–	8	–	1	–	–	–	3	–	–	–	1	2	6	5	11
Great Northern and Great Eastern Joint.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Great Northern and London and North-Western.	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Great Western	–	4	–	15	–	2	–	–	1	20	–	9	–	3	–	12	3	24
Hull, Barnsley, and West Riding	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	1	–	1
Lancashire and Yorkshire	–	5	1	16	–	–	–	1	–	9	–	22	–	–	–	25	3	32
Lancashire and Yorkshire and London and North-Western.	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	1	–
London and North-Western	1	2	–	48	–	–	–	–	1	25	–	17	–	5	2	45	4	66
London and North-Western and Great Western Joint.	–	–	1	–	–	–	–	–	1	2	–	1	–	–	–	–	1	3
London and South-Western	–	3	–	3	–	–	–	–	–	2	–	–	–	–	–	3	3	11
London, Brighton, and South Coast	–	1	–	1	–	–	–	–	–	–	–	1	–	–	–	1	–	8
London, Chatham, and Dover	–	1	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–
London, Tilbury, and Southend	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Manchester, Sheffield, and Lincolnshire	–	1	–	6	1	–	–	–	–	1	–	3	–	–	–	3	3	3
Mersey	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–
Metropolitan	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Midland	–	–	–	2	–	–	–	–	1	7	–	1	–	–	–	1	3	11
Midland, and Great Western Joint	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
North and South-Western Junction	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
North-Eastern	–	3	1	20	2	3	–	3	1	6	1	16	–	–	2	15	2	33
North London	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	3
North Staffordshire	–	–	–	1	–	1	–	–	–	–	1	–	–	–	–	–	–	1
Rhondda and Swansea Bay	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Severn and Wye and Severn Bridge	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Sheffield and Midland Joint	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Somerset and Dorset	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	1
South-Eastern	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	1	2
Stalybridge Joint Station	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–

TABLE No. 5.

e 1893, as KILLED or INJURED in the UNITED KINGDOM by the TRAVELLING of TRAINS or the MOVEMENT of VEHICLES way, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury.

From ling off ines, during travel- ing of rains.		By coming in contact with over-bridges or erections on the sides of the line during the travelling of trains.		When getting on or off engines, vans, &c. during the travelling of trains.		Whilst attending to, or by the failure of, machinery, &c. of engines in steam.		Whilst working on the permanent-way, sidings, &c.		Whilst attending to gates at level-crossings.		Whilst walking, crossing, or standing on the line on duty.		From being caught between vehicles.		From falling or being caught between trains and platforms, walls, &c.		Whilst walking, &c. on the line on the way home or to work.		Miscellaneous.		TOTAL.	
d.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
	–	–	–	–	–	–	–	–	1	–	–	1	–	1	–	–	–	–	–	–	–	4	2
	–	–	–	–	–	–	–	–	–	–	–	1	2	–	–	–	–	–	–	–	–	1	3
	1	–	–	–	–	–	3	1	3	–	1	10	7	–	–	1	1	1	–	–	–	17	28
	–	–	–	–	3	–	3	3	1	–	–	2	6	–	1	–	3	1	1	1	2	14	52
	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
	–	–	1	–	6	–	30	4	3	–	–	6	11	1	2	1	5	1	1	–	16	17	164
	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	5
	2	–	3	–	2	–	40	1	3	–	–	4	9	–	5	–	1	1	–	–	13	10	188
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2
	3	1	1	1	8	1	86	6	5	–	–	7	11	1	3	1	3	4	2	–	18	30	348
	–	–	–	–	1	–	–	–	–	–	–	–	2	–	–	1	–	–	1	–	2	1	12
	3	–	1	–	3	–	6	3	4	–	–	–	3	–	1	1	3	1	–	–	2	8	48
	1	–	1	–	–	–	1	–	2	–	–	2	2	–	–	–	1	1	–	–	1	3	21
	–	–	–	–	1	1	–	–	–	–	–	1	2	–	–	–	–	–	–	–	–	2	6
	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	1	–	–	–	–	2	1
	1	–	–	–	–	–	1	1	–	–	–	3	1	–	–	–	–	1	–	–	–	9	20
	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
	–	–	–	–	–	–	–	–	2	–	–	1	–	–	–	–	–	–	–	–	–	1	4
	–	–	–	1	3	–	–	7	2	–	–	5	7	3	2	–	–	1	–	–	3	21	39
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1
	2	–	2	–	2	2	32	1	3	–	1	5	9	–	2	–	1	–	–	–	2	17	137
	–	–	–	–	2	–	1	1	–	–	–	1	–	–	–	–	–	–	–	–	6	3	13
	–	–	–	–	–	–	–	3	–	–	–	1	–	–	–	–	–	–	–	–	–	5	3
	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–	2	4
	–	–	1	–	–	–	–	–	3	1	–	3	5	–	–	–	–	–	1	–	1	6	14
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1

[Continued on next page

TABLE No. 5.—Number of Servants repo

NAME OF COMPANY.	From accidents to trains, &c. *See* Table No. 4.		Whilst coupling or uncoupling vehicles.		By coming in contact whilst riding on vehicles during shunting with other vehicles, &c. standing on adjacent lines.		Whilst passing over, or standing upon, buffers during shunting.		When getting on or off, or falling off, engines, waggons, &c. during shunting.		Whilst braking, spragging, or chocking wheels.		Whilst attending to ground-points, marshalling trains, &c.		Whilst moving vehicles by capstans, turntables, props, &c. during shunting.		By ot accide duri shunti operati not incl in th preced	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	j
Taff Vale	–	–	–	–	–	–	–	–	–	2	–	–	1	–	–	–	1	
West London Extension	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
West Riding and Grimsby	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
TOTAL, ENGLAND AND WALES	1	26	4	126	4	10	–	5	5	82	2	75	1	10	8	118	37	2
SCOTLAND.																		
Caledonian	–	–	–	15	1	2	–	8	1	10	–	5	–	1	–	5	1	
Dundee and Arbroath	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	
Glasgow and Paisley Joint	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	
Glasgow and South-Western	–	1	–	1	–	–	–	1	–	1	–	1	–	–	–	–	–	
Great North of Scotland	–	2	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	
Highland	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
North British	1	2	–	9	–	1	–	–	1	5	–	4	–	2	2	4	–	1
Portpatrick and Girvan Joint	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
TOTAL, SCOTLAND	1	6	1	26	1	3	–	9	2	17	–	10	–	3	3	9	1	2
IRELAND.																		
Belfast and Northern Counties	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Bessbrook and Newry	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Dublin, Wicklow, and Wexford	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Great Northern of Ireland	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Great Southern and Western	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–	1	–	
Midland Great Western	–	–	–	3	–	–	–	–	–	1	–	–	–	–	–	–	–	
Tralee and Dingle	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Waterford and Limerick	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	
TOTAL, IRELAND	3	1	–	4	–	–	–	–	–	2	–	–	–	1	–	1	–	
TOTAL, UNITED KINGDOM	5	33	5	156	5	13	–	14	7	101	2	85	1	14	11	128	38	2

led or Injured, &c.—*continued.*

...m. ...g off ...ngs, ...aring ...avel- ...of ...ns.		By coming in contact with over-bridges or erections on the sides of the line during the travelling of trains.		When getting on or off engines, vans, &c. during the travelling of trains.		Whilst attending to, or by the failure of, machinery, &c. of engines in steam.		Whilst working on the permanent-way, sidings, &c.		Whilst attending to gates at level-crossings.		Whilst walking, crossing, or standing on the line on duty.		From being caught between vehicles.		From falling or being caught between trains and platforms, walls, &c.		Whilst walking, &c. on the line on the way home or to work.		Miscellaneous.		Total.	
Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	
–	–	1	–	1	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	6
–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1
–	–		–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
15	1	11	2	34	4	205	33	32	1	2	54	80	6	17	6	19	13	6	1	66	183	1,153	
2	–	2	–	3	–	6	2	5	–	–	8	4	–	–	1	1	1	–	–	–	15	82	
–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	2	–	
–	–	–	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	–	–	2	2	
2	–	2	–	–	–	–	1	–	–	–	1	–	–	2	–	–	–	–	–	–	2	12	
–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	2	5	
–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	–	1	–	–	–	2	2	
2	–	2	1	1	–	1	–	3	–	–	2	5	–	–	–	1	2	–	1	3	10	55	
–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	
6	–	6	1	4	–	8	4	8	1	–	14	10	–	2	1	3	4	–	1	3	35	159	
–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	
–	–	–	–	–	–	–	–	1	–	–	1	–	–	–	1	–	–	–	–	–	2	1	
–	–	–	–	1	–	–	–	–	1	–	1	–	–	1	–	–	–	–	–	–	2	2	
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	5	
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	5	
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	
1	–	1	–	1	–	–	–	1	1	–	2	–	–	1	1	–	1	–	–	1	8	16	
22	**1**	**18**	**3**	**39**	**4**	**213**	**37**	**41**	**3**	**2**	**70**	**90**	**6**	**20**	**8**	**22**	**18**	**6**	**2**	**70**	**226**	**1,328**	

TABLE No. 6.

TABLE showing the different OCCUPATIONS of SERVANTS of RAILWAY COMPANIES and CONTRACTORS who were KILLED and INJURED during the Six Months ending 30th June 1893, and classifying their INJURIES as far as practicable.

CLASS OF SERVICE.	Fatal.	Amputations.			Fractures.		Dislocations.	Crushes.			Scalds, Burns.	Sprains, Cuts, or Bruises.	Severe.	Shaken.	Slight.	Unspecified Injury to				Miscellaneous.	Total Injured.
		Legs or Arms.	Feet or Hands.	Toes or Fingers.	Legs or Arms.	Collar-bones or Ribs.		Legs or Arms.	Feet or Hands.	Body.						Head.	Body.	Legs or Arms.	Feet or Hands.		
Brakesmen and Goods-guards	21	1	3	5	8	7	3	4	33	1	3	87	3	1	8	10	16	37	14	2	246
Capstanmen	1	–	–	–	4	–	–	–	4	3	–	5	2	–	–	3	1	4	7	–	33
Carmen	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		4	–	4
Carriage-cleaners	1	–	–	–	–	–	–	–	2	–	–	1	1	1	1	–	1	1	2	–	10
Carriage or waggon examiners	5	–	–	–	–	–	–	–	–	–	–	1	1	–	–	1	–	1	1	–	5
Checkers	–	–	–	–	1	1	–	–	–	2	–	–	–	–	–	–	–	–	1	1	6
Chockers, Chain-boys, and Slippers.	–	1	–	–	1	1	–	–	2	3	–	2	–	–	–	1	2	4	8	1	26
Clerks	4	–	–	–	–	–	–	–	–	–	–	2	–	1	–	1	–		–	–	4
Engine-cleaners	2	–	1	–	2	1	–	1	2	5	–	8	–	–	1	–	3	5	3	–	32
Engine-drivers	12	–	2	–	3	3	2	1	6	1	8	33	5	–	3	9	16	29	13	4	138
Firemen	4	1	2	1	3	1	1	3	17	–	13	46	11	2	7	18	10	26	23	5	190
Gatekeepers	2	1	–	–	–	–	–	–	–	–	–	–	–	–	–		–	1	–	–	2
Greasers	6	1	1	–	1	–	–	–	–	–	–	2	–	–	–	–	–	1	2	–	8
Guards, Passenger	2	–	–	–	–	–	–	–	1	–	–	5	1	2	4	1	1	2	2	1	20
Horse-drivers	2	–	1	–	1	1	–	1	5	–	–	4	–	–	–	1	–	3	4	–	21
Inspectors	–	1	–	–	–	–	–	–	–	–	–	2	–	–	–	3	3	1	–	–	10
Labourers	16	2	–	–	2	2	–	–	6	1	1	15	4	–	3	2	2	1	2	–	43
Lampmen	3	–	1	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	3
Loaders and Sheeters	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–		2		–	4
Mechanics	9	–	–	–	1	1	–	1	1	–	–	10	2	2	–	2	–	1	3	–	24
Messengers	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Number-takers	–	1	1	–	–	–	–	–	1	–	–	1	–	–	–	1	–	2	–	–	7
Permanent-way Men	73	2	2	1	4	2	–	–	4	1	–	22	2	3	2	4	3	4	1	2	59
Pointsmen	–	–	–	–	1	1	–	–	–	1	–	1	1	–	–	–	1	–	–	–	6
Policemen	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–
Porters	28	1	–	1	7	4	2	4	32	12	1	53	16	2	1	6	7	22	21	1	193
Shunters	15	1	2	–	3	4	2	2	26	–	–	50	5	2	2	3	11	18	20	1	152
Signal-fitters	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Signalmen	3	–	–	–	–	–	–	–	1	–	–	5	2	–	–	1	3	–	1	–	13
Station-masters	1	1	–	–	–	–	–	–	–	–	1	1	–	–	–	1	1	2		–	7
Ticket-collectors	–	–	–	–	–	–	–	–	–	–	–	2	–	–	2	1	–	1	–	–	6
Watchmen	2	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1
Yardsmen	1	–	–	–	–	–	–	–	–	–	–	4	1	–	–	–	2	1	1	–	9
Miscellaneous	4	1	–	–	1	–	–	–	5	1	–	8	1	4	1	4	–	6	5	–	37
Contractors' Servants	7	–	–	–	1	–	–	–	2	–	–	1	3	–	1			–			8
TOTAL	226	15	16	9	45	30	10	18	150	31	27	372	61	20	37	73	83	175	138	18	1,328

TABLE No. 7.

NUMBER of PERSONS reported, during the Six Months ending 30th June 1893, as having been KILLED or INJURED whilst upon the Companies' Premises, by Accidents in which the Movement of Vehicles used exclusively upon Railways was not concerned, distinguishing between Passengers, Servants of Companies, and other Persons, and classifying, as far as practicable, the Nature and Causes of the Accidents occasioning the Death or Injury.

	England and Wales.		Scotland.		Ireland.		United Kingdom.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS :—								
Whilst ascending or descending steps at stations	3	69	—	—	—	—	3	69
By being struck by barrows, by falling over packages, &c. on station platforms	—	18	—	1	—	—	—	19
From falling off platforms	—	17	—	—	—	—	—	17
By other accidents	2	32	—	1	—	—	2	33
TOTAL	5	136	—	2	—	—	5	138
SERVANTS :—								
Whilst loading, unloading, or sheeting waggons	5	647	—	8	—	1	5	656
Whilst moving or carrying goods in warehouses, &c.	—	92	—	—	—	—	—	92
Whilst working at cranes or capstans	1	67	—	—	—	1	1	68
By the falling of waggon-doors, lamps, bales of goods, &c.	2	81	—	2	—	—	2	83
From falling off, or when getting on or off, stationary engines or vehicles	3	142	—	4	—	—	3	146
From falling off platforms, ladders, scaffolds, &c.	7	202	—	9	—	—	7	211
By stumbling whilst walking on the line or platforms	2	169	—	—	1	—	3	169
Whilst attending to stationary engines in sheds	1	117	—	—	—	—	1	117
By being trampled on or kicked by horses	1	27	—	—	—	—	1	27
Whilst working on the line or in sidings	6	329	1	1	—	—	7	330
Miscellaneous	3	195	—	3	1	2	4	200
TOTAL	31	2,068	1	27	2	4	34	2,099
PERSONS ON BUSINESS AT STATIONS AND OTHERS	12	77	—	3	—	—	12	80
SUMMARY :—								
Passengers	5	136	—	2	—	—	5	138
Servants	31	2,068	1	27	2	4	34	2,099
Persons on business at stations and others	12	77	—	3	—	—	12	80
TOTAL ALL CLASSES	48	2,281	1	32	2	4	51	2,317

Board of Trade,
20th September 1893.

COURTENAY BOYLE.

REPORTS TO THE BOARD OF TRADE BY INSPECTING OFFICERS OF THE RAILWAY DEPARTMENT UPON CERTAIN ACCIDENTS WHICH HAVE BEEN INQUIRED INTO.

	Page.
LONDON AND NORTH-WESTERN:	
Major-General Hutchinson's report on the collision that occurred on the 12th April at Willaston between a passenger train and a portable crane. - - - - - -	23
MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE:	
Major Yorke's report on the collision that occurred on the 7th April at Manchester (London Road) station, between a passenger train and the buffer-stops - - -	27
NORTH-EASTERN:	
Major-General Hutchinson's report on the collision that occurred on the 27th May at Darlington (Black Top) station between two passenger trains	30
SHEFFIELD AND MIDLAND JOINT:	
Major Marindin's report on the acciden that occurred on the 28th May at New Mills station to a passenger train, the leading bogie of a carriage of which left the rails - - -	34
SOUTH-EASTERN:	
Major-General Hutchinson's report on the accident that occurred on the 5th May to a passenger train which ran through one of the gates of the Erith Lower Road level-crossing - -	37

For other Reports of Inquiries into Accidents which have occurred during the six months, *see* [C.—7057.] and [C.—7074.]

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W
22nd May 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 17th ultimo, the result of my enquiry into the circumstances connected with the accident which occurred on the 12th ultimo at Willaston station on the Crewe and Whitchurch line of the London and North-Western Railway.

In this case, as the 9.37 a.m. Great Western Railway Company's up passenger train from Crewe for Wellington was running through Willaston station, first the engine and then the rear portion of the train came into collision with the jib and balance of a portable crane; this jib, while the crane was being moved out of a siding joining the down line having (owing to its not having been properly secured) swung round foul of the up line just as the passenger train was approaching it.

Three passengers have complained of injury, and the Willaston station-master, who was in charge of the crane at the time, was struck by the balance-box of the crane and killed on the spot.

The passenger train consisted of a six-wheeled, four wheels coupled, engine and six-wheeled tender, running engine in front, one third-class brake-carriage, one third-class and two composite carriages and a brake-van, the coupled wheels of the engine and the tender wheels being fitted with a steam-brake, and four wheels of each of the vehicles with the vacuum-brake, both actuated by the same tap on the engine, but the brake on the engine and tender not being applicable by the guard and not being brought into use by automatic action in the case of the severance of a coupling. In this train the funnel of the engine was knocked off, the dome cover damaged, and the 6-ft. side of the cab carried away; the sides of the first, fourth, and fifth vehicles were damaged.

The portable crane was on a waggon in the centre of a train, an engine, tender, brake-van, two box-waggons and four loaded waggons being in front of it, and a crane-protection waggon, two loaded and two empty waggons being behind it. The cast-iron frame and other parts of the crane were damaged.

Description.

Willaston is an ordinary roadside station with sidings adjoining the down line. It is approached from Crewe on a curve to the right, the up home-signal being situated about 100 yards on the Crewe or north side of the siding-points on the down line on which point the crane was standing at the time of the accident; these points again are about 100 yards north of the north end of the platform, at the south end of which is the signal-cabin. In consequence of the curve, the view from the engine of an up train of any vehicle standing on the siding-points on the down line is much impeded.

The rule referring to the movement of portable cranes is given in an appendix.

The portable crane in question is attached to a truck of which the frame is about 11 ft. 6 ins. long. The top of the jib of the crane when lowered stands about 10 ft. 9 ins. above rail level and projects about 14 feet from the centre of the truck; if therefore the truck was standing on the down line and the jib was swung round at right angles to the line, the top of the jib would reach beyond the off rail of the up line. The balance-box is carried on arms projecting 10 ft. from the centre of the truck, the top of these arms at the extremities being 7 ft. above rail level. These arms would therefore project about 18 inches into the 4-ft. space of the up line if the truck were standing on the down line and the arms were swung round at right angles to that line.

Evidence.

1. *Charles Hassall*, signalman; 17 years' service, 15 years signalman.—I have been 14 years at Willaston, where I came on duty on April 12 at 6 a.m. for 12 hours. I got the "Be ready" for the Great Western train at 9.42 a.m., and "Train entering section" signal at the same time from Gresty Lane box, Crewe, 2½ miles off. I gave the "Be ready" signal on to Newcastle crossing; it was accepted at 9.44 a.m., at which time I took off my three up-signals and the train reached the scene of the accident at 9.47 a.m., being due to pass Willaston at 9.42 a.m. I drew the lever locking No. 9 siding

points at 9.34 a.m., a goods train from Nantwich having arrived at 9.34 a.m., with which train the waggons attached to the crane had work to do. I noticed that when the waggons were leaving the siding the crane was in its right position. On seeing the Great Western train pass the distant-signal I put it to danger and then attended to the level-crossing wickets. After this, hearing a whistle from the Great Western driver, I turned round and saw the engine a short distance from the crane, the jib of which was across the up line, and directly after this it was struck by the engine. I could then see nothing for smoke, &c. I believe the engine drawing the crane, but not the crane itself, had reached the down line when the Great Western train had passed the distant-signal. The train stopped at the north end of the platform. I could not say at what time the engine began to draw out of the sidings.

2. *William Scrivens*, driver; 22 years in the Great Western Company's service, 10 years driver.—I began work at 7 a.m. on the 12th April, to sign off at 11.25 a.m., and was to come on again at 7.25 p.m. for a further period of five hours, making 9 hours 25 minutes in all. I joined the 9.37 a.m. passenger train, from Crewe for Wellington, at Crewe. My engine was a six-wheeled engine, four wheels coupled in rear and a six-wheeled tender, running engine first; the train consisted of five vehicles, there being a steam-brake on the coupled wheels of the engine and on the tender wheels, and a vacuum-brake on four of the six wheels of the four front vehicles, and on all the van wheels; the same tap applied to both brakes, but the automatic action of the brake did not apply to the engine and tender. We left Crewe at 9.39 a.m., two minutes late, waiting "Line clear," and were detained two minutes more at Gresty Lane, and on approaching Willaston (where I had not to stop), I found the signals all clear. Soon after passing the distant-signal I saw steam coming from an engine, and about 100 yards after passing it I gave the ordinary station whistle as a warning. When close to the home-signal I saw the station-master rushing across the 4-ft. of the up line, and thinking something must be wrong I shut off steam and whistled sharper, the speed at the time being between 30 and 40 miles an hour. When I first saw the station-master he was passing from the outside of the up line across towards the crane, but not making any signals to me. I had got a few yards inside the home-signal when I saw the jib of the crane coming across the up road and it was right across it when I struck it. I had had time to apply the brake fully, the vacuum-gauge showing 25 inches, and I think the speed was reduced to 15 miles an hour when the funnel of the engine struck the end of the jib, which afterwards hit the dome-casing and the left side of the cab of the engine, carrying a portion of it away. I could see nothing more for steam, when we came to a stand at the Crewe end of the platform. My place is on the 6-ft side of the engine. My view of the crane-jib had been impeded by the engine and by the two box-waggons in front of the crane. I am quite sure that the station-master was on the left side of the crane with his right hand against its jib and with his back towards Crewe. Neither I nor the fireman was hurt. I could not say whether the London and North-Western engine was in motion or not as I approached it. I did not hear any whistle from it.

3. *Herbert Turner*, fireman; 10 years in the Great Western Company's service, six years fireman.—I am Scrivens' regular mate and was with him on April 12th. My place was on the left-hand side of the engine. I corroborate the driver's evidence which has been read over to me.

4. *Hugh Leonard*, driver; 50 years in the London and North-Western Company's service, 45 years driver.—I commenced work on the 12th ultimo at 4.30 a.m., to sign off at 1 p.m. I was driver of the 8.50 a.m. goods train from Nantwich for Crewe. We arrived at Willaston in due course with a brake van only. We at once went down to the sidings and set back on to some waggons, among which was the portable crane. We then got a signal to leave the siding and drew out on to the down line, when the brakesman stopped us when the engine and about six waggons were on the down line and the crane waggon was on the siding-points. We were stopped to make a shunt into another siding. We had scarcely stopped when the accident happened through the Great Western engine striking the crane, of which I had not seen the jib foul, as the brake-van next the engine prevented my doing so. I was running tender first. My fireman was on the engine when the accident happened. I had not seen the station-master just before the accident.

5. *Elijah Beach*, brakesman; 8¾ years in the London and North Western Company's service, 8½ years brakesman.—I came on duty at 5.30 a.m. on April 12th to remain till 2 p.m. I was brakesman of the 8.50 a.m. goods train from Nantwich for Crewe. We left at 9.25 a.m., not being able to start sooner, the yard being blocked, and arrived at Willaston at 9.35 a.m. with engine running tender first, and a brake-van. We at once went into the sidings joining the down line, and attached 13 waggons, including the crane to the brake-van. Before we moved out the jib of the crane had to be lowered to clear the loading gauge; this was alone by the station-master, and I did not know whether he had or had not secured the balance-box—it is the custom to use the pins on all occasions. The train then consisted of tender, engine, brake-van, two box waggons, two waggons of coal, a waggon of goods, a waggon of stone with jib of crane over it, crane-protection waggon, two waggons of coal and two empties. While the station-master was screwing the balance-box up, he told me and a porter to push a waggon out of another siding into position for unloading. We did this and then returned to the train and coupled the engine, brake-van, and box-waggon to the rest of the waggons including the crane. The station-master then said "Right," and I gave the driver a signal to draw ahead from the sidings side of the waggons, the station-master being on the same side as the train was drawing out. I saw the jib of the crane begin to move, and I shouted and held up my arms to stop the driver, and he did so, the crane being then just on the main line points. The station-master ran round the last waggon and ran up the 6-ft. space towards the crane, and the last time I saw him was on the waggon behind the crane, trying to push round the balance-box, just at which time the accident occurred; the jib, which was at rest, being nearly straight across the up line. I was about four waggons off the crane when the train stopped, and I ran forward and had just reached the crane when the accident occurred; the station-master was killed by the balance-box as it was turned round on the jib being struck. I shouted to the station-master "Jump!" as I saw the jib pass over him, but he did not do so. The porter who was on the same side as the station-master and myself, but nearer the engine than I was, ran up and tried to move the balance-box at the same time as the station-master. When the jib began to move the Great-Western train was coming in sight, and there was no time to move the engine back into the siding.

6. *Walter Southern*, porter at Willaston; 5¼ years in the service of the London and North-Western Company. I commenced work on the 12th ultimo at 6 a.m. to remain till about 6.30 or 7 p.m. The 8.50 a.m. goods train from Nantwich arrived about 9.35 a.m. The station-master and I met the train in the goods yards and commenced shunting; a portable crane which was in the sidings had to be drawn out to get two waggons away from the back of it. The station-master was on the crane winding the balance-box up to the jib, to make all safe before

beginning to move it. As he was getting off the crane after he had done this, he gave me the signal to start, lifting up his arm and at the same time saying "Draw out," which I distinctly heard. I passed the signal on to the driver, and as the train was approaching the main line on its way out I saw the jib moving round. I gave the driver a signal to stop, but he had noticed himself what had occurred and was pulling up. The station-master then ran towards the crane and got on to the waggon next behind it; I stood on the ground close to the crane and we both tried to push the jib back into its place, the crane being at this on the down line and the jib across the up line. Before we could get the jib back clear of the up line, the Great Western passenger train from Crewe came up and the funnel of its engine struck the jib, knocking it round towards the station-master who was still standing on the waggon behind it; he stooped and the jib passed over him, but the balance-box as it followed round caught him on the head, knocking him off the waggon, and when I went up to him I found him quite dead. The jib went round again and caught the sides of some of the Great Western carriages, which came to a stands at the platform. The jib of the crane was leading as it was coming out of the siding. Shunting with the travelling crane has been done here scores of times, the station-master always being present. On the jib beginning to move I heard the station-master shout "Walter" three times, which was all he said. I then noticed that the pins had not been put in. He was in the habit of putting in the pins to prevent the jib of the crane from moving, but must have forgotten to do so on the present occasion.

Conclusion.

This very serious accident, which unhappily resulted in the death of the Willaston station-master, was due to his neglect of an important rule in connection with the movement of a portable crane. This crane, which was standing among some other waggons in the sidings adjoining the down line at Willaston, had together with these waggons to be moved out on to the down line in the course of some shunting operations. The station-master was on the spot superintending the work and had himself been moving the balance-box of the crane into the proper position before having the shunt commenced; he had, however, unfortunately omitted to secure this box by means of the pins provided for preventing any rotatory movement, when he gave orders to the engine driver to draw out of the siding on to the down line. In passing round the curves of the connection between the siding and the down line, the jib of the crane, which was pointing down the line towards Crewe, must have received an impulse, which caused it to commence turning towards the right. Upon this being observed the train was at once stopped, but not before the truck supporting the crane had just reached the down line, by which time the arm of the jib (the end of which projects about 14 feet from the centre of the truck) was said to be foul of the up line. Instead of attempting to stop the Great Western Company's up passenger train from Crewe, now closely approaching the up home signal (which was off), or of trying to hurry back the goods engine into the siding and thus to get the jib clear of the up line, the attention of the station-master and of the two men with him—one a porter and the other the brakesman of the goods train—appears to have been entirely devoted to endeavouring to push the jib of the crane clear of the up line, and while they were so engaged, with the station-master on the truck next behind the crane, the funnel of the engine of the passenger train came into collision with the jib of the crane. The funnel was knocked off, the jib also striking the dome cover and side of the cab, which were both damaged. The side of the carriage next the engine was then struck and slightly damaged; after this the second and third carriages got past without being struck, but the arms supporting the balance box (which arms project about 10 feet from the centre of the truck) must by this time have swung round and have caught the sides of the two rear vehicles, which were damaged. In continuing to revolve the balance-box struck the station-master (who had stooped so as to avoid being struck by the jib of the crane), swept him off the truck on which he was standing, and killed him on the spot. The other two men who were on the ground close by the crane escaped unhurt.

The omission of the station-master to put in the pins, which would have held the balance-box in its place and would consequently have prevented the jib of the crane from rotating when the truck carrying the crane was moving round the curves of the siding connection leading to the down line, was consequently the immediate cause of this accident. He is stated to have been a man of excellent character and had superintended similar operations with the portable crane on many times previously. He must have lost his presence of mind on the present occasion, before directing his own attention and that of his two assistants to endeavouring to move round the jib he might have signalled to the passenger train to stop, for, had he done this the accident would, I believe, have been prevented.

The porter and brakesman, who were acting directly under the orders of the station-master, can hardly be censured for their part in the transaction; they were both on the wrong side of the crane for signalling to the driver of the passenger train.

The driver of the goods train had stopped his engine after drawing out of the siding upon receiving a signal from his brakesman to do so. He thought he had been stopped to make a shunt into another siding, and had not seen or known that the jib of the crane was foul of the down line, as the view of it from the foot-plate of the engine, which was running with the tender in front, was impeded by the boiler, brake-van and two box-waggons next the engine, combined with the curve of the line.

Scrivens, the driver of the passenger train, on approaching Willaston, where he had not to stop, found the signals all clear for him to run through. When about 100 yards inside the distant-signal he gave the ordinary station whistle, and saw at the same time steam from an engine near the station. When about 100 yards from the home-signal he states that he saw the station-master pass from the outside of the up line across the 6-ft. space to the down line, but not making any signal to him to stop, his speed being at this time 30 to 40 miles an hour; thinking something must be wrong he shut off steam and whistled sharply, but it was not till he had passed a few yards beyond the home-signal that he saw (about 90 yards off), the jib of the crane (the view of which was hindered by the brake-van and box-waggons in front of it), coming across towards the up line, it being right across when the funnel of his engine struck it.

Scrivens says he had time fully to apply his continuous-brake (the vacuum-gauge showing 25 inches) after seeing the jib and before the collision, thus reducing his speed to 15 miles an hour, his engine stopping in another 100 yards.

The fireman of the passenger train corroborates his driver's evidence.

Neither of these men is in any way to blame for what took place.

None of the servants of the companies concerned in this collision had been on duty more than five hours when it occurred, and their hours of duty were in no case excessive.

The occurrence of this accident should cause special attention to be directed to the rules relative to the use of portable cranes, and I think the railway companies would do well to direct the attention of their servants to the necessity of using the pins for preventing the movement of the balance-box when the cranes are being moved in shunting operations, as well as when they are being transported from station to station.

I would draw attention to the fact of the automatic action of the brake of the Great Western Company's passenger train not applying to the engine and tender, this being a non-compliance with the order made, under the Regulation of Railways Act of 1889, on this company on the 26th November 1890.

I have, &c.

C. S. Hutchinson,
Major-General, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

London and North-Western Railway Company.

Rule 137.

Removal of Travelling Cranes.

Before removing any travelling crane, the person in charge of it must see that the jib is properly lowered and secured, and so fixed that it will pass under the gauge; and, when it has to be removed by train, it must, when practicable, be so placed that the jib points towards the rear of the train.

The station-master or person in charge of the siding for the time being, and the head guard of the train, must, before a crane is attached to a goods train take care that all the fastenings provided for the purpose of securing the jib and balance-box in their proper positions during transit are in good condition and applied, and that the necessary match waggons are provided. At each stopping place on the journey the head guard must satisfy himself that the fastenings are secure. Waggon examiners must also inspect the fastenings in addition to the usual examination of the wheels, &c. If any defect exists in any of the fastenings, the crane must not be attached to a train, and if travelling it must be detached for the fastenings to be made good.

Printed copies of the above Report were sent to the London and North-Western and Great Western Railway Companies on the 15th June.

MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE RAILWAY.

Board of Trade, (Railway Department,)
May 6th, 1893.

SIR,

I HAVE the honour to report for the information of the Board of Trade, in compliance with the Order of the 10th April, the result of my enquiry into the collision that occurred on the 7th idem, at Manchester (London Road) station, on the Manchester, Sheffield, and Lincolnshire Railway.

On this occasion the 10.50 a.m. train *ex* Stalybridge on entering London Road station ran into the buffer-stops at the end of the old arrival platform.

Seven passengers are reported to have complained of minor injuries.

The train consisted of a passenger tank-engine, having four coupled wheels and leading and trailing radial axles, and six vehicles in the following order, viz., third-class brake, third-class carriage, two composites, third-class carriage, and third-class brake. The engine and coaches were fitted with the automatic vacuum-brake, working blocks on the four coupled wheels of the engine and on four out of six wheels on each of the other vehicles. The total weight of the train including engine was 132 tons 7 cwt., and the braked weight was 84 tons 12 cwt.

No damage was done to the engine by the collision, and the injury to the train consisted merely of two windows and one headstock broken. The buffer-stops, which are of a very substantial description, have hydraulic pistons behind the buffer-beam, and spring buffers in front of it. The buffer-beam was splintered by the collision to such an extent as to require renewal.

The permanent way did not suffer.

Description.

This collision occurred at the end of the old arrival platform which is 220 yards long. At the outer end of this platform is situated the station signal-cabin and about 220 yards from this cabin there is the London Road junction-cabin. The station is approached on a falling gradient the inclination of which is 1 in 381 at a point half a mile outside, but which changes to 1 in 652 at the London Road junction-cabin and so continues up to the buffer-stops.

The signals were all "off" for the train to which the collision occurred, and no question concerning the signal arrangements has arisen.

Evidence.

William Arthur Bell, signalman, states: I have been in the Company's service 13 years, and 12 years signalman, and for 5½ years I have been stationed in London Road station-cabin. On 7th April I came on duty at 6 a.m. for an eight hours spell. At 11.9 a.m. I saw the 10.50 a.m. train *ex* Stalybridge coming into the station. It was then at my inner home-signal, about 100 yards from the box. I cannot say what speed the train was travelling at when I first saw it, but it passed my box at about 8 or 10 miles an hour. My box is at the end of the platform, or 220 yards from the buffer-stops. Steam was shut off when I first saw the train, but I cannot say whether the brakes were on or off as the train passed my cabin. I was busy with other work at the time. I thought the train was running in at about the usual rate. When there are four or more vehicles standing at the stops or if the signalman has any doubt as to the number standing there, the rule is to bring any train entering the platform to a dead stand at the home-signal before allowing it to run into the station. In this case the line was clear up to the stops and there was therefore no necessity to bring the train to a stand. The train in question ran into the old arrival platform, known as B platform. The train is due in at 11.8 a.m., and it was therefore a minute late. I received the "Be ready" and "Train on line" signals at 11.5 a.m., and I immediately pulled off my signals for it, that is to say, I took my slot off the junction home-signal and lowered my own home or platform-signal. I noticed nothing unusual about the train and I did not watch it. I heard a slight noise and I had a suspicion that the train had run into the stops.

Mr. Price, station-master, states: At about 11.9 a.m. on the 7th April, I was standing on the arrival platform about 10 yards from and behind the buffer-stops, when the 10.50 a.m. train *ex* Stalybridge came in. I noticed nothing unusual whatever about the speed as it came in. Steam was shut off and the brake was on. I noticed the wheels were skidding about 30 to 40 yards from the stops. I did not think the train would run into the stops, and was surprised at its doing so. It was rather a severe shock. Seven passengers complained to me. One passenger had a bad cut over the right eye. I am unable to account for the mishap. I know the driver, and he is a steady careful man. I should think the train struck the stops at about five or six miles an hour. I did not notice any appreciable reduction of speed from the time I first saw the train till the time the collision occurred.

Wright Wyld, porter, states: I have been in the Company's service as porter for five months, and I have been stationed at London Road a month. On the 7th April I was standing on the old arrival platform about 40 yards from the buffer-stops, at about 11.9 a.m. I saw the 10.50 train from Stalybridge running into the station. It was about 20 yards from the end of the platform when I first saw it. I did not think it was coming in faster than usual. I cannot say

whether the brake was on then. When it passed me it was travelling at about three miles an hour. I did not notice whether the brake was on. I did not think the train was going into the stops, but when the engine was close to the stops I noticed the wheels were skidding, and I passed the remark to some one that I thought the rails must be greasy. The train ran into the stops at about three miles an hour. The shock was not severe, but there was, I believe, a slight rebound.

Robert James Hughes, porter, states: I have been in the Company's service about four years, and I have been on and off stationed at London Road station about six months. On the 7th April at about 11.9 a.m. I was standing on the old arrival platform about half way down. I saw the 10.50 a.m. train from Stalybridge come in. It was then just at the end of the platform. It seemed to be travelling no faster than usual. When it passed me the speed would be about three or four miles an hour, and the wheels of the train were then skidding slightly. I had no idea the train would run into the stops. The speed seemed to decrease a little before the train reached the stops. I heard the noise of the collision, but I did not notice whether there was any rebound or not.

William Turner, guard, states: I have been in the Company's service 13 years, 12 months as passenger guard. On 7th April I came on duty at 5.40 a.m. at Stalybridge, having come off duty the day before at 2.38 p.m. At 10.15 a.m. I took a train from London Road to Stalybridge, and I returned from Stalybridge with the same train at 10.50 a.m. We left to time. The train then consisted of six vehicles, viz., two third-class carriage-brakes (one at each end of the train), two thirds, and two composites, and it was fitted with the automatic vacuum-brake throughout. The brake was tested before we left Stalybridge, and there was 20 inches of vacuum on my gauge in the van. There are three stops after leaving Stalybridge before reaching London Road, and the brake worked all right at all of these places. The driver did not over-run the platform at any place, and he pulled up the train very steadily. On approaching London Road the driver shut off steam at Ardwick about three-quarters of a mile away, and I do not think he re-applied it. As we approached London Road station the signals were all off for the train. The driver applied his brake at Ardwick, and reduced speed by it to about eight miles an hour. When the train was past the curve he blew off his brake, but I do not think he re-applied steam. I applied my hand-brake when the train reached the London Road junction-cabin about 200 yards from the station. Almost directly after this the driver re-applied his vacuum-brake. The train was travelling then about six miles an hour. The speed was further reduced slightly when we reached the platform-signals. We entered the platform at four to five miles an hour. I do not think it was any faster than usual. On entering the station the driver appeared to re-apply the brake with full force. I had no idea that the train would touch the stops. It is unusual for the driver to apply his brake with full force at the entrance to the station. He did not take it off again, nor did I touch my hand-brake. I did not at any time think we should touch the stops. I did not feel much shock in my van, which was at the tail of the train. The train was made up the same as usual. I work with that train every other week. I did not notice any rebound and the brake was certainly on at the time of the collision. I am unable to account for the mishap.

Edward Houson, engine-driver, states: I have been in the Company's service 14 years, and for $3\frac{2}{3}$ years I have been driver. I am a spare passenger driver. On 7th April I came on duty at 4.20 a.m., and I came off duty at 3.15 a.m. the previous day, My engine was No. 727, four-wheel coupled side tank passenger-engine, with radial axles at each end, and the engine was fitted with the automatic vacuum-brake working blocks on the four coupled wheels. We were running bunker first from Stalybridge. The brake was tested before leaving Stalybridge, and it was in good working order. I had no difficulty whatever in stopping the train with the vacuum-brake at the intermediate stops. On approaching Manchester I shut off steam at Fairfield down distant-signal, about four miles away. I first applied my continuous-brake on approaching Ardwick. I was then travelling about 30 miles an hour. After passing Ardwick curve I released the brake. I was then travelling from 16 to 18 miles an hour. I re-applied my brake about 400 yards from London Road junction-cabin, and I allowed the small ejector to blow it off. I applied it slightly again at the junction, at which point I was going at about 9 or 10 miles per hour. I kept the brake rubbing till I arrived at the station-cabin, at the end of the platform, where I applied it about half-power, so as to get the train under sufficient control to enable me to pull it up with the hand-brake. I had then about 18 inches of vacuum, and I was travelling at about five to six miles an hour. I was gradually reducing speed all the way down the platform. When I was about half the way down the platform I thought that I was not going to stop, because the engine-wheels then picked up. I at once applied sand, but this did not appear to have any effect. When I was about 50 yards away from the stops I released the brake and reapplied it, the wheels picked up again, and I had no time to do anything else, and we ran into the stops at about three to four miles an hour. The shock was not very severe. Neither I nor my mate were injured. My engine was not damaged in any way. I did not notice that there was any rebound. I have constantly worked similar trains to this one into Manchester and I know the road well. I have often driven engines of the same type. It was a fine dry day, but the rails from No. 10 points up to the stop-blocks were in a very greasy condition on that day, due, I believe, to washing coaches at the platform. I have never known the rails to be so greasy on any previous occasion. I have never run into buffer-stops before. There is a rule in the appendix that all trains are to travel between London Road junction and the station platforms Manchester, at a maximum speed of five miles per hour. I have a copy of the rule book, and I know the rule about the use of continuous-brakes on entering terminal stations. I understand the rule to mean that a driver must go into all terminal stations well prepared to stop with the hand-brake. From the station-cabin up to No. 10 points, which are about half-way down the platform, I felt sure that I had my train under control. But when the wheels picked up near No. 10 points I thought I should not stop in time.

James Riley, fireman, states: I have been with the Company six years, about three years and eight months as fireman. On 7th April I came on duty at 4.20 a.m., having come off duty at about 4.30 p.m. the previous afternoon. I have heard my driver's evidence read, and I agree with it. I applied my hand-brake on passing London Road junction-box, and I had it on when we ran into the station. When we got half way down the platform the wheels skidded. I applied the sand, but it seemed to have no effect. The driver applied his automatic brake full as soon as the wheels skidded. As this had no effect he blew it off again and re-applied it full, but it had no better effect. I also released the hand-brake and reapplied it as hard as I possibly could, but also without effect. The train glided into the stop-blocks. There was nothing out of the usual course as to the speed with which we approached the station. I thought the driver had full control over his train, and could have stopped anywhere. I thought the rails were more greasy than usual when I looked at them after the collision.

Conclusion.

This collision must, I think, be attributed to an error of judgment on the part of driver Houson, who appears to have miscalculated the speed at which he entered the station, and to have failed, in consequence, to make adequate use of the powerful brake at his disposal.

Driver Houson asserts that he was travelling at a speed of five or six miles an hour when he entered the station; that he then applied his brake at about half power in order to reduce the speed sufficiently to enable him to pull up the train with the hand-brake; that when the train was half way down the platform the engine wheels skidded, thereby diminishing the effect of the brake, and that the train then slid forward into the stops. He attributes the skidding of the wheels to the fact that the rails near the buffer-stops were greasy, owing to the practice of washing empty carriages while they are standing at the platform. Porters Wyld and Hughes, who were standing on the platform when the train arrived, state in their evidence that the train passed them at a speed of only three miles an hour, and guard Turner estimates the speed on reaching the platform at four to five miles an hour. But, on the other hand, the signalman at the station-cabin, which is at the end of the platform, says the train passed his cabin at eight or ten miles an hour; and Mr. Price, the station-master, considers the speed at which the train struck the stops to have been five or six miles an hour. The evidence of men in the position and with the experience of the station-master and signalman seems to me to carry more weight than that of the porters and guard, and when to it is added the fact that the massive buffer-beam, although protected by spring buffers in front and hydraulic pistons behind, was splintered by the collision, there appears to be little doubt that the speed of the train on entering the station and while running down the platform was greater than stated by the driver. While, therefore, I do not attribute to driver Houson any wilful mis-statement, I am unable to avoid the conclusion that he considerably under-estimates his speed. According to his statement the engine wheels skidded when he was about 110 yards from the stops (the platform being 220 yards long), owing to the unforeseen greasiness of the rails. It may be that this was the case, but had he entered the station at a proper rate of speed, and had he used his continuous brake with judgment, there should have been no necessity for him to apply his brake when half down the length of the platform with such force as to produce any risk of skidding. Under any circumstances it is the driver's duty to enter a terminal station in such a manner that he can pull up at any spot and be prepared for any contingency.

Driver Houson had a light train, and there was ample brake-power at his disposal, and it is not possible to relieve him of the responsibility for the collision. I consider that he misjudged his speed on entering the station, and that he failed to use his continuous brake with sufficient judgment so as to counteract his initial error as to speed. He had been on duty for six hours and 50 minutes at the time of the mishap.

This collision opens up once more the question as to the use or non-use of the continuous-brakes on running into terminal stations. Without repeating at length the arguments in favour of an alteration of the existing rule on the subject, it can, I think, hardly be denied that each succeeding buffer-stop collision is an additional proof that some modification of the present practice is needed. What is required is some method of ensuring that drivers shall enter terminal stations at such a speed as to have a large amount of brake power in reserve to meet unforeseen contingencies. With this view it has been suggested by the inspecting officers of the Board of Trade that drivers should be instructed to use their hand-brakes only on such occasions, thereby keeping the whole power of the continuous-brake in reserve to meet contingencies. Some difference of opinion exists as to the advisability of so prohibiting the use of the continuous-brake under normal conditions when entering terminal stations, and I am inclined to think that the discussion that has arisen on this particular point has tended to obscure the real issue. The object to be attained is, as stated above, to ensure that the speed of trains running into terminal stations or dead end bays shall be such, that the drivers shall have a reserve of brake power at their disposal sufficient to meet any emergency. At any rate it appears to me to be unsatisfactory, that, in these days of progress, preventable collisions of this nature should continue to occur.

I have, &c.

The Assistant Secretary,
Railway Department, Board of Trade.

(Signed) H. A. Yorke,
Major, R.E.

Printed copies of the above Report were sent to the Company on the 28th June.

NORTH-EASTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
26th June 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the order of the 1st instant, the result of my enquiry into the circumstances connected with the collision which occurred on the 27th ultimo at the north end of Darlington (Back Top) station, on the North-Eastern Railway.

In this case, as the 7.30 p.m. passenger train from Tebay for Saltburn (due to leave Darlington at 9.45 p.m.) was drawing ahead at the north end of the up platform line at Darlington station, it was run into at the rear by the 8.45 p.m. return excursion train from Middleton-in-Teesdale for Hartlepool, due at Darlington at 9.38 p.m.

The collision occured about 9.48 p.m.

Twenty-nine passengers (principally at the front of the Tebay train) complained of being injured or shaken, the injuries being generally in the head.

The Tebay train consisted of engine, tender, brake-van, third-class carriage, two composites, third-class brake-van, and two third-class carriages, eight vehicles coupled in the order stated, fitted throughout with the Westinghouse brake, and in it the last three vehicles were damaged. No wheels left the rails, but the force of the collision caused a separation between the fourth and fifth vehicles.

The excursion train consisted of a 6-wheeled coupled goods engine and 6-wheeled tender, running engine in front, and 13 third-class carriages (the first and last being brake compartments, with a guard in each), fitted throughout with the Westinghouse brake, and in it no damage was sustained, nor did any wheels leave the rails.

Description.

Darlington station is approached from the north on an easy falling gradient of 1 in 895; the up main line is straight as far as the facing-points, at which the up platform line and up main line separate, the former then curving to the right to reach the east or up side of the island platform. To gain admission to the up platform line a driver has to pass an up distant-signal and three up home-signals, the latter being needed to cover various connections and junctions. These signals and the points connected with them are worked from the north cabin, which is situated at the north end of the island platform, 285 yards north of the spot where the collision occurred. This cabin contains 100 working levers and 8 block instruments, the signalman in charge having an assistant and a booking boy to help him in his duties.

The next cabin to the south of this, and 407 yards from it, is the station east cabin on the island platform; from this the points of a scissors crossing between the up line and an independent line and the signals relating to them are worked. Between this cabin and the north cabin absolute block system is worked on the up line as regards trains not requiring to interchange their passengers, the block section extending from the southernmost home-signal worked from the north cabin to the scissors-crossing up home-signals, a distance of about 235 yards; but for trains running in connection with each other, two or sometimes three are admitted to this part of the platform at one and the same time under a caution system.

There are no special instructions to drivers as to speed in entering Darlington station.

Evidence.

1. *Jesse Thirkell*, driver; 38 years' service, 30 years driver.—On May 27th I commenced work at 12.40 p.m., to sign off at 11.30 p.m. I joined the train from Tebay for Saltburn, which was standing at the up platform, at about 9.40 p.m., the train being due to start at 9.45 p.m.; when my engine was connected to the train it was 25 yards inside the scissors crossing signals. My engine was a tender engine, running engine in front, and the train consisted of eight vehicles, the Westinghouse brake being fitted throughout the train, engine, and tender. In about five or six minutes the assistant station-master gave me a signal to draw ahead on the platform line to allow, as I now know, an excursion train from Middleton for Hartlepool to draw in to the platform. The signal had been taken off before this, and I had gone forward about 10 yards, and was getting nicely under weigh when my train was struck in rear by the excursion train. I had heard a sharp whistle just before the collision, which occurred about 9.46 p.m. We were waiting for a train from the North, due at 9.41 p.m. I felt a sharpish bump on the engine, and was knocked against the front of the tender. I was not hurt. The fireman was not hurt. I do not know at what time exactly the signal was taken off. I should have drawn up clear of the scissors crossing. On the collision occurring, the train separated between the rear van and the carriage in front of it, and the brakes went on and we stopped in 8 or 10 yards. No wheels left the rails. It is customary for the train to be stopped at the same place every evening. The lamps were alight in the station.

2. *Richard Whittington*, guard; 24½ years' service, 21 years guard.—On 27th May I signed on at 1.10 p.m., to sign off at 11.10 p.m. I was guard of the 7.30 p.m. passenger train from Tebay for Saltburn, due at Darlington at 9.25 p.m., and to leave at 9.45 p.m., or to wait the arrival of the 8 p.m. train from York, due at 9.41 p.m. On arriving at Darlington at 9.35 p.m., 10 minutes late (having been detained 10 minutes at Tebay waiting for a London and North-Western train), the train consisted of engine, tender, horse-box, van, third-class, two composites, third-class, van, two third-class, eight vehicles in all; the engine and tender having taken the horse-box away with it before Thirkell's engine joined the train. I saw that all signals were off for us to enter the station on the up platform line, and we stopped at the usual place, *i.e.*, with the tail of the train about a vehicle's length north of the refreshment room board. In about five or six minutes the new engine joined the train, and at about 9.45 p.m. the assistant station-master, Mr. Thompson, told me that the train was to draw ahead clear of the scissors-crossing to allow the excursion train due at 9.38 p.m. to draw in, and he told me he was going to give these instructions to the driver. I was in consequence closing the doors in the rear portion of the train, and I was going to get into the van, the third vehicle from the rear, when, hearing an engine whistle sharply three times, I looked round and saw the engine of the excursion train close to the rear vehicle, and coming in at a speed of 12 miles an hour, my train having then gone forward about a carriage length. I was on the platform, and some of the passengers had just got in, on the driver being told to draw ahead. The force of the collision caused a separation in the train between the fourth and fifth vehicles. Upon this the continuous brake went on, and there was an interval of about six yards between the two portions of the train when they stopped; nothing left the rails. The engine of the excursion train was close up to the rear vehicle of my train, but not buffer-locked with it. The passengers in the front and middle portion of the train were most injured. I had not noticed that the signal for covering my train was off before the collision. The collision took place about 9.46 or 9.47 p.m. I am not aware why Thompson did not direct me to draw north of the scissors-crossing on arrival. The South train had not arrived before the collision. I saw no one trying to stop the excursion train. I had no time to do so. The two vehicles behind the van were attached at Barnard Castle.

3. *William Fall*, driver; 32 years' service, 21 years driver.—On May 27th I signed on at 12.20 p.m., to sign off at 12 midnight. I started from West Hartlepool at 1.35 p.m., with an excursion train for Middleton-in-Teesdale, and I started back with the same engine and train at 8.35 p.m., the advertised time. My engine was a 6-wheeled coupled tender engine, running engine first, and a 6-wheeled tender, and the train consisted of 13 vehicles; the Westinghouse brake applied to all the wheels of the engine and tender, and to four wheels of each of the vehicles. Thomas Lowther was my fireman, he had been with me about a month. On the return journey I was detained 13 minutes at Romaldkirk by signals, 10 minutes at Tees Valley junction, and after this I found the signals clear, and on approaching Darlington station I found the distant and three home-signals for the up platform line off without having to whistle for them. I passed the last home-signal at a speed of about 10 miles an hour, intending to stop at the scissors-crossing-signals, and owing to an engine and horse-box standing on the middle line and a curve I did not see the tail of the other train till I was 30 or 40 yards from it. My attention was first directed by hearing some sharp whistles from an engine standing on the middle line before I reached it, upon which I stepped across from the right to the left side of the engine, and then caught sight of the tail of the other train, upon which there was a red light, but I first caught sight of the train itself seeing it by the station gas lights. I had shut off steam at Parkgate, the next cabin north of the north junction, and on seeing the obstruction I stepped across and applied the Westinghouse brake with full force, the pressure being about 65 lbs., whistling at the same time. The speed was diminished to about four miles an hour on striking the other train. I could not say whether it was in motion. My engine stopped dead on the collision taking place, there being afterwards a gap between it and the last carriage of the train. No wheels left the rails in my train; neither I nor my fireman jumped off, nor were we injured. I did not reverse the engine, the fireman put his hand-brake on the tender after I had applied the Westinghouse brake. The fireman was strange to the station. I am not aware of any special rule as to speed, &c. for entering Darlington station. I have been in the habit of entering Darlington station with excursion trains for 12 years, but not with ordinary trains.

4. *Thomas Lowther*, fireman; 15 years' service, nine years fireman.—I have been Fall's fireman for about three months, and I was with him on May 27th, my hours being the same as his. I agree generally with his evidence except that I saw no engine attached to the vehicle standing on the middle road, and heard no whistle from it. My driver whistled at the same time he applied the brake. I did not apply the tender hand-brake, which is on the driver's side.

5. *Thomas N. Loraine*, guard; 19½ years' service, 11 years guard.—On May 27th I signed on at 1.5 p.m., to sign off at 11.5 p.m. I was in charge of the excursion train from West Hartlepool to Middleton and back. We left Hartlepool at 1.35 p.m. and reached Middleton at 3.56 p.m., 11 minutes late. We started back punctually at 8.35 p.m., being due to start from Darlington at 9.38 p.m. We were detained 13 minutes at Romaldkirk and four minutes at Barnard Castle West. After this there were no detentions, and on approaching Darlington station all the signals at the north side were off, meaning that we might run up to the scissors crossing signals. I was not aware there had been any collision till we had stopped at the platform. I had heard no brake whistling. The speed at the north cabin did not exceed 9 to 10 miles an hour. The collision occurred at 9.50 p.m., four minutes having been gained in running between Barnard Castle and North Road stations. I had felt the brake go on sharp just as we stopped. No wheels left the rails in my train, and one passenger complained of injury. My train went on as it was to Hartlepool at 10.30 p.m. My train consisted of 13 third-class carriages, the first and last having brake compartments. The Westinghouse brake applied to the whole train and Fall had stopped properly at all five stops between Middleton and Darlington.

6. *David Almond*, porter; 11 years' service, all the time at West Hartlepool.—I was appointed to act as assistant guard of the West Hartlepool and Middleton excursion train on the 27th May. I was in the brake-carriage next the engine. On the return journey, my brother, a clerk in the goods department at West Hartlepool, was with me, but no one else. I kept no time. I do not know the Darlington signals. The first knowledge I had of anything being wrong was hearing a whistle from a man near the north end of the platform. Immediately afterwards I heard a whistle from my engine and the brake applied, and directly after this came the collision; our speed being between 9 and 10 miles an hour. I had seen nothing of the other train. I was knocked against the side of the brake compartment, but was not hurt, nor was my brother.

7. *James Searle*, signalman; nine years' service, 6½ years signalman.—I came on duty at 2 p.m. on May 27th to remain till midnight in the station east

cabin, where I have been employed about four months. I work alone in the cabin and book the trains. I do not work absolute block either north or south, the next adjacent cabins being station cabins north and south. Upon a train approaching the north cabin, the signalman offers the "Be ready," and I should accept it if I had no train standing between my cabin and the north cabin, but should there be one already between the two cabins I should give back a caution, and the train would be allowed to enter, having been first stopped at the five-armed post. If two trains were already at the platform, a third might be admitted under the same arrangement. On May 27th the "Be ready" signal for the train from Tebay for Saltburn was given at 9.32 p.m. I accepted it; I got it "On line" at 9.35 p.m., and it arrived at once and stopped with the engine a few yards north of the scissors crossing signals. The excursion train from Middleton was due at about 9.37 p.m., but as I had not been instructed otherwise by the assistant station-master, the regular train stopped in the usual place. The engines were then changed. At 9.43 p.m. I received "Be ready" for the excursion train, the block instrument then showing "Train on line." I did not accept it, as it was not a regular train, nor one connecting with the Tebay train; nor did I acknowledge it. Nothing more passed between me and the north signalman with regard to the excursion train. About 9.46 p.m. Mr. Thompson asked me if I had received the excursion train, and on my telling him that I had he ordered the Tebay train, for which the scissors crossing signal was off, to draw up the platform; it had got into motion and had advanced about an engine's length when the collision took place. I heard some sharp whistles just before the collision, which occurred at 9.48 p.m.

8. *Joseph Hemingway*, signalman; 33 years' service, 19 years signalman.—I have been employed all the time in Darlington north cabin, where I came on duty on the 27th May at 2 p.m. to remain till 10 p.m. I work block between Parkgate on the north and Darlington east, west, and south, having 8 block instruments and 101 levers in my cabin. I have an assistant and a booking boy with me. I gave the "Be ready" signal to Searle for the Tebay train at 9.33 p.m.; it was at once accepted. I gave it "On line" at 9.35 p.m., and Searle pegged over the needle at 9.36 p.m., at which time I gave "Clear" to Parkgate. The next train due was the Middleton excursion train, for which Parkgate gave me the "Be ready" at 9.43 p.m., and "On line" at 9.45 p.m. I passed the "Be ready" on to Searle at 9.43 p.m., the needle then being pegged to "Train on line." Searle did not accept the "Be ready." Before I had received "Be ready" for the excursion train the station shunter asked my assistant on the telephone to let the pilot engine from behind the station into the middle road. He told him we would do so, and the engine was admitted along the down line and then into the middle line, and just as the engine had come to a stand on the down line the "Be ready" for the excursion train was received. I was then engaged in watching the engine to put back the points when it had got clear into the middle road, and forgetting that the Tebay train had not been cleared I set the road and lowered the four signals to admit the excursion train, the block instrument still showing "Train on line." I never remember committing a similar error before. It is customary to admit one or even two trains after bringing them to a stand behind another train, if connections have to be made. The excursion train passed at 9.47 p.m. I saw my mistake just after this.

9. *Edwin Thompson*, assistant station-master at Darlington; 20 years' service, two years an assistant station-master.—I came on duty at 6.30 p.m. on the 27th May, to remain till 6 a.m. I was on the platform when the Tebay train arrived, the excursion train being due to arrive after it, at about 9.37. I had heard it reported 16 minutes late from Barnard Castle. I did not direct the Tebay train to be run at once to the south side of the scissors-crossing because a change of engines had to take place, and also because the excursion train was running late. Although the South train was reported late, I thought the Tebay train would have got away before the excursion train arrived. On hearing that the "Be ready" had been received for the excursion train earlier than I had expected, I thought it better to move the Tebay train, and it had passed forward about a carriage length when the collision occurred. I had heard whistles from only one engine just before this. A severance took place in the Tebay train between the fifth and sixth vehicles. The collision took place at about 9.50 p.m. The parties injured were principally at the front of the train. The statement as to the admission of trains made by Searle and Hemingway are correct.

10. *Robert W. Yell*, shunter; five years' service, 15 months' shunter.—On the 27th May I came on duty at 6.30 p.m. for 10 hours. When the Middleton excursion train was approaching the station I was standing on the up platform some 30 or 40 yards north of the tail of the Tebay train, and, seeing that the excursion train was running in too fast, I showed a red light and whistled with a large mouth whistle when the engine of that train was near the north end of the platform. I do not think the driver heard me, and he passed me, with brakes on, at a goodish speed, faster than I could walk, but I think I might have jumped on to the engine. About the same time that I whistled the driver of the pilot engine, who was about opposite to me, also opened his whistle, and it was, I think, that which attracted the excursion driver's notice.

Conclusion.

This collision was caused by a grave mistake made by signalman Hemingway, on duty in Darlington north cabin, who, forgetting that the train from Tebay for Saltburn was standing at the up platform (where it had arrived at 9.35 p.m.) with its tail about 280 yards south of his cabin, and that Searle, the signalman at the station east cabin had refused to accept the "Be ready" signal for the excursion train when he had offered it to Searle at 9.43 p.m., nevertheless lowered his signals for the excursion train, and only became aware of the mistake he had made when it passed at 9.47 p.m., and it was only then on hearing some whistling that Hemingway realised, but too late, the mistake he had made. Just before receiving the "Be ready" signal for the excursion train from Parkgate cabin (the next to the north), Hemingway had been engaged in letting a pilot engine proceed from one of the lines on the east of the up platform line into the line next to it, and he was watching this engine, so that he might put back the points to their normal position, when the "Be ready" for the excursion train was received from Parkgate cabin, and was passed on at once to the station east cabin, where, though it was not accepted, and in face of the fact of the

block instrument showing "Train on line" for the Tebay train. Hemingway in a fit of absence of mind lowered his signals for the excursion train.

Hemingway has been 33 years in the service, and 19 years a signalman, employed all the time in the Darlington north cabin, where he had came on duty at 2 p.m. to remain till 10.0 p.m., and had thus been at work about $7\frac{3}{4}$ hours out of a spell of eight hours at the time of the collision. He is a man of good character, and made the best amends in his power for the serious mistake he had committed by frankly acknowledging it and by not trying to implicate other servants of the Company.

The train from Tebay for Saltburn arrived at Darlington at 9.35 p.m., 10 minutes late, and after standing at the north end of the up platform (where it was waiting for a train from the South due at 9.41 p.m.) rather more than 10 minutes, the driver was instructed by the assistant station-master on duty to draw ahead to the south of the scissors crossing to allow the excursion train, which was due at 9.37 p.m., but had been reported 16 minutes late from Barnard Castle, to arrive at the north end of the platform. The driver had accordingly got into motion when the collision occurred; the guard of the Tebay train, who had just been closing the doors and was in the act of getting into his van (the third vehicle from the rear), hearing three sharp whistles looked round and saw the engine of the excursion train close up to the rear of his train.

Fall, the driver of the excursion train, had started with it from West Hartlepool for Middleton-in-Teesdale at 1.35 p.m., had arrived there at 3.56 p.m., and had commenced the return journey at 8.35 p.m., right time; he was detained 13 minutes by signal at Romaldkirk and two minutes (4 minutes according to guard) at Tees Valley junction, after which he had clear signals all the way, and on approaching Darlington found all the signals (one distant-signal and three home-signals) off for the north end of the platform without his having had to whistle for them. Fall says that he shut off steam at Parkgate (about half a mile from the north end of the station), and after passing the last home-signal (168 yards from the point of collision) at a speed of about 10 miles an hour, his attention was attracted by some sharp whistles from an engine standing on the middle line next east of the up platform line, and that on stepping across from the left to the right side of the engine to get a better view round the curve, he saw at a distance of 30 or 40 yards the tail of the Tebay train, the engine standing on the middle line having previously obstructed his view of it; that he at once applied the Westinghouse brake, which was fitted throughout his train, with full force, the air pressure being about 65 lbs., whistling at the same time, and that his speed was reduced to about four miles an hour on collision with the other train; upon striking which his engine stopped dead. Both he and his fireman remained on the engine and were neither of them hurt. Fall has been a driver 22 years, and had been accustomed to drive excursion trains, but not ordinary passenger trains, through Darlington station for the last 12 years. He had come on duty at 12.20 p.m. on the 27th May to remain till midnight, and had, therefore, been at work about $9\frac{1}{2}$ hours when the collision occurred.

Fall is hardly to be blamed for the share he bore in the collision; finding all signals off as he approached the north end of the station—except the up distant-signal, worked from the east station cabin, an indication that he was not at liberty to proceed beyond the scissors crossing home-signals—he was naturally running in with confidence, but quite prepared to stop at the scissors crossing home-signals, and it was only after passing the southernmost home-signal, worked from the north cabin, that his attention was aroused to something being wrong by hearing an engine whistle, upon which, after crossing the footplate to get a better view ahead, he applied the Westinghouse brake when some 30 or 40 yards from the tail of the other train, and struck it at a speed reduced from 10 to 4 miles an hour; these figures being probably considerably underrated. Considering that his fireman was a stranger at Darlington, Fall would have acted more wisely had he stepped across the footplate to the platform side of the engine before hearing the whistle which caused him to do so; he might, in that case, have had an earlier view of the Tebay train.

Fall's fireman was a stranger in Darlington, and could throw but little light on what occurred. His hours were the same as his driver's.

The assistant guard, a porter at West Hartlepool, riding in the brake compartment next the engine, was also unacquainted with the Darlington signals. It was hearing a whistle from near the north end of the platform (about 160 yards from the point of collision) that first attracted his attention, directly after which he felt the brake applied, and almost immediately afterwards the collision.

The guard in charge of the train, riding in the rear brake compartment, was unaware that there had been any collision until the train had stopped at the platform. He does

not think the speed on passing the north cabin exceeded 9 or 10 miles an hour. He stated that the driver had made proper stops at the five intermediate places between Middleton and Darlington, but that four minutes had been gained in the run between Barnard Castle and Darlington, for which 37 minutes were allowed, but only 33 minutes taken, the distance being about 16¾ miles.

The assistant station-master on hearing that the excursion train was reported 16 minutes late from Barnard Castle did not think it necessary to order the Tebay train to draw south of the scissors-crossing on its arrival, thinking it would have gone away before the excursion train arrived, and the place it stopped at being more convenient for the necessary change of engines. On hearing later on that the "Be ready" signal for the excursion train had been received sooner than he had expected, he ordered the Tebay train to be moved ahead, and it had fortunately gone forward about a carriage length and was still in motion when the collision occurred.

From what has been stated above, it will be seen that as regards the Tebay train and the excursion train, there would, but for the extraordinary forgetfulness of signalman Hemingway, have been no breach of block telegraph regulations, as the excursion train would have been kept standing at the north cabin home-signal until the Tebay train had left the section between the north cabin and east cabin, these trains having to make no connection with each other. But for trains which have to make connections, it appears that the block telegraph rules are violated daily, two and, in some cases, three trains being admitted into the same block section.

As the North-Eastern Company have never applied for or received any exemption from block working as regards Darlington station, they have been habitually disobeying the order, issued in January 1891, with regard to the present mode of working a large number of trains running into that station, and to this disregard of the order their very serious attention should be drawn.

There is often a difficulty in providing excursion trains with servants fully acquainted with the route of the train, but it was, in my opinion, a mistake to send with this train both a fireman and assistant guard each ignorant of the signals, &c. at Darlington.

To guard against the occurrence of a mistake such as led to the present collision, it is very desirable to give the signalman in the east cabin electrical or mechanical control of the southernmost up home-signal worked from the north cabin. Had such control existed, this signal could not have been lowered without the co-action of the east cabin signalman, who, being aware that the Tebay train was standing at the platform, would have kept the signal at danger.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

(Signed) C. S. Hutchinson,
Major-General, R.E.

Printed copies of the above Report were sent to the Company on the 25th July.

SHEFFIELD AND MIDLAND JOINT RAILWAYS.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
June 21st, 1893.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 8th instant, the result of my enquiry into the circumstances attending an accident which occurred on the 28th ultimo at New Mills station on the Sheffield and Midland Joint Railways.

In this case as the 8 a.m. up Midland excursion train from Guide Bridge to Matlock Bath, consisting of engine and tender, and 16 vehicles (equal to 20), was being shunted from the up to the down line, through a cross-over road at the west end of New Mills station, at about 9 a.m., to clear the line for an up express, the leading bogie of the third vehicle from the rear, a Midland bogie third-class carriage, left the rails at the cross-over road points on the up line, and was slightly damaged.

The train was brought to a stand very promptly, and no other vehicle left the rails.

There were only three passengers in this carriage, and none of them were injured, but two passengers in another part of the train are stated to have complained of being shaken.

For particulars of damage to rolling stock and permanent way, *see* Appendix.

Description.

At New Mills station the signal-cabin is near the junction of the Hayfield branch at the east end of the station, and on the down side of the line.

There is a main line cross-over road opposite to the cabin, and another a short distance west of the station platform.

The line is on a slight curve to the north, and upon a gradient of 1 in 90 rising towards the east.

The following distances westward from the signal-cabin should be noted :—

To east end of platform	27 yards.
,, west end of platform	136 ,,
,, trailing points of west cross-over road on up line	164 ,,
,, trailing points of west cross-over road on down line	220 ,,

Evidence.

William Simpson Sykes, engine driver, in the service of the Midland Railway Company 18 years, said : I have been a driver six years, stationed at Belle Vue all the time, and am well acquainted with the railway in the neighbourhood of New Mills. On May 27th I came on duty at 6.20 a.m. to work a special train of empty carriages at 7.30 a.m. from Ashton Road to Guide Bridge, a special passenger train from Guide Bridge to Matlock Bath due to arrive at Matlock Bath at 10.15, and the 6.55 p.m. train from Matlock Bath to Guide Bridge, due to arrive at that station at 9 p.m. Arrangements were made for me to book off duty at Ambergate at about 11.30 a.m. and to book on duty again at Ambergate at 5.30 p.m. On May 26th I was off duty. My train consisted of six-wheel coupled goods engine, six-wheeled tender, and 16 vehicles, equal to 20. All the wheels of the engine and tender were fitted with the steam-brake, and the train with the automatic vacuum-brake, both brakes being worked with one handle from the foot-plate of the engine. Nothing of an unusual character took place until we arrived at New Mills, except that I had been slightly delayed by signals in consequence of other excursion trains being in front. On approaching New Mills the signals were at danger. I passed the distant-signal in that position, and on approaching the home-signal I sounded my whistle and that signal was lowered. On drawing past the platform the station-master gave me a signal to stop. My train was not booked to stop at New Mills. On the station-master giving me a signal to stop I assumed it was to take up the passengers who were on the platform. My guard had previously told me that the front portion of the train was full, but that there was room in the rear, and consequently I drew near to the starting-signal, bringing the rear portion of the train as near to the platform as possible. At this time the starting-signal was lowered, and shortly afterwards I received a signal from the guard to leave the station. I then turned round and found that the starting-signal had been placed to danger, and on looking towards the signal-box, I saw the signalman giving me a signal to set back. I called out to him, and he replied to the effect that he required my train to be shunted on to the down main line. The front guard then also told me that the signalman required the train to be placed on the down road. I then released the brakes, and allowed the train to run back without steam. When the engine had moved perhaps two engine lengths I received a signal from the platform to stop. I at once applied the continuous-brake, and the train was brought to a stand, but from what I heard afterwards I believe that the brake was applied by the breaking of a casting on the carriage which left the rails. If this was so, the breakage must have taken place at practically the same moment that I applied the brake. Shortly afterwards it was decided that a guard's brake, which was a few vehicles from the front of the train should be placed in the rear of the carriages that were attached to my engine. This was done, and I proceeded on my journey, leaving, I believe, the three rear vehicles of my train at New Mills. I could not see the tail of the train from my engine when I was told by the signalman to set back.

Henry Atkinson, fireman, said : I have been in the service of the Midland Company about 3½ years, and passed to act as fireman a little more than two years. On May 27th I came on duty at 6.20 a.m. to act as fireman with driver Sykes. On May 26th I came on duty at 5 a.m. and acted as fireman until 4 p.m. I am fairly well acquainted with the railway in the neighbourhood of New Mills. I have heard the evidence given by driver Sykes. It is correct. I have nothing to add. I could not see the tail of the train from the footplate.

John Tanner, passenger guard, in the service of the Midland Railway Company about 16 years, said : I have been a passenger guard about 13 years, and have been accustomed to run past New Mills about 10½ years. On May 27th I came on duty at 7 a.m. to work a train of empty carriages from Ashton Road to Guide Bridge, and the 8 a.m. special passenger train from Guide Bridge to Matlock Bath. On May 26th I came on duty at Derby at 7 a.m. I worked as under guard with the 8.47 a.m. train from Derby to Ripley and back, reaching Derby at 10.5 a.m. I then assisted on the platform at Derby until 4.50 p.m., when I went to Manchester, signing off duty there at 7 p.m. I left Guide Bridge at 8.10 a.m., 10 minutes late, which was caused by other trains being in front. Between Guide Bridge and New Mills my train was delayed by signals, owing to other trains being in front, and we arrived at New Mills at 8.56. We were due to pass New Mills without stopping at 8.33. The last stopping place before reaching New Mills was Woodley, and on leaving that station the front part of the train was fairly well filled with passengers, but some vehicles in the rear of the train were practically empty. My train consisted of six-wheel coupled goods engine No. 1698, six-wheeled tender and 16 vehicles, equal to 20, in the following order from the tender :—Third-class bogie, brake carriage, saloon, bogie third-class brake, 2 third-class carriages, bogie third-class, 2 third-class carriages, 2 bogie composite carriages, 1 composite carriage, 3 bogie third-class carriages, third class carriage, and van in rear. The whole of the train, with the exception of the engine and tender, was fitted with the automatic vacuum-brake, capable of being applied from the foot-plate of the engine, and from each of the guards' vans. On approaching New Mills the distant-signal was at danger. I did not notice the position of the home-signal. On nearing the station-platform I noticed that my train was being brought to a stand, and that there were passengers on the platform. As soon as the train had stopped the passengers entered the

carriages that were alongside the platform. My van, the third-class carriage next to it, and a bogie carriage, were away from the platform. When the passengers had entered the carriages I gave a signal for the train to proceed, and I noticed that the starting-signal was lowered for it to do so, but shortly afterwards the train commenced to set back, and almost immediately the bogie truck at the Derby end of the bogie carriage left the rails. I had no idea that the points at the rear of the train had been opened, and at first it occurred to me that the train was being slightly moved backwards in consequence of the driver having some difficulty in starting. The moment I heard the carriage leave the rails I did my best to signal the driver to stop, and the train was brought to a stand very promptly. The train came to a stand very quickly, and I believe this took place in consequence of the casting in connection with the vacuum-brake pipe on the vehicle which left the rails breaking. Shortly afterwards it was decided that a guard's brake, which was near the front of the train, should be placed in the rear of the carriages that were on the rails. This was done, and my train left New Mills at 9.57 a.m., leaving the three rear vehicles of the train at New Mills. We were due at Matlock Bath at 10.15 a.m. After unloading the train at Matlock Bath I had to go to Ambergate with the empty train, and would then be off duty till 5.30 or 5.45. All the passengers went forward from New Mills after the accident. The carriage which left the rails had only about three passengers in it. No one in that carriage complained of injury, and I saw no one injured. The rear carriage was quite empty. If I had known that the train was going to be set back it would have been my duty to see that the rear vehicle was clear over the points, and have given a signal to the signalman. It was a fine morning. There was a very heavy traffic.

James Ogley, goods guard, said: I have been in the service of the Midland Railway 22 years, and have been a goods guard about 21 years. I am stationed at Birmingham, and have been accustomed to run past New Mills about 2½ years. On May 27th I came on duty at Ashton Road at 6.50 a.m., to work as under guard with passenger guard Tanner. On May 26th I came on duty at Birmingham at 8 a.m., to work with a special of empty carriages from Birmingham to Ashton Road, Manchester, and signed off duty at 3.45 p.m. My train was brought to a stand alongside the New Mills up platform, and some passengers entered it. I then received a signal from the rear guard for the train to proceed, and I signalled to the fireman to do so. Directly afterwards I heard a conversation going on between the driver and the signalman, and I went to the off side of my brake, and heard the signalman say that he required the train to shunt for the express to pass, and I believe I repeated to the driver what the signalman had said. Immediately afterwards the train commenced to move backwards. I was looking out on the platform side and saw the stationmaster and rear guard giving a signal for the train to stop. I passed the signal to the driver. Directly afterwards the train was brought to a stand, and I then found that the Derby end bogie of the third carriage from the rear was off the rails. When the train began to set back my van was opposite to the signal cabin.

Joseph Henry Clarke, stationmaster at New Mills, in the service of the Sheffield and Midland Joint Committee, said: I entered the service of the Midland Railway Company about 19 years since as porter. I was a porter about 1½ years; was a signalman at various places about seven years; was stationmaster at various stations for 10½ years; and have been stationmaster at New Mills about six months. On May 27th I came on duty at 6 a.m., and remained until about 11.30 p.m. On May 26th I came on duty to attend to a special passenger train at 5 a.m., and went off duty at 11 p.m. My usual hours of duty are, one week 7.30 a.m. until 7.50 p.m., and the other week from 9.30 a.m. until 11.30 p.m. I reside at the station, and have an opportunity of taking rest between the times of coming on and going off duty, and of getting my meals at home. The special passenger train that was booked to take passengers from New Mills was unable to convey the whole of the passengers that I had booked, and I decided to stop the following train to pick up the passengers (about 30) who had been left behind. I arranged with the signalman for the train to be stopped at the station to take up the passengers, and on the train entering the station I signalled the driver to bring it to a stand. He did so, and the passengers entered the carriages. A signal was then given for the train to proceed. I cannot distinctly recollect telling the guard that I was right for the train to leave, but I have no doubt that I did so. As soon as the train began to set back I found that the carriages were not clear of the points, and the guard and myself commenced to give the signal for the train to stop, but directly afterwards a carriage left he rails. Mr. Rogers, of Dukinfield, complained that he had received a blow on the side of his head, which was swollen. There were only two or three passengers in the carriage which left the rails. Mr. Rogers was not in that carriage. I did not know that the train was going to be shunted. There was one waggon on the front siding, and five or six on the back siding. I think the middle siding was clear. I have only once before had to shunt a passenger train across here to clear the road.

Charles William Platts, signalman, in the railway service about 11 years, said: I commenced with the Sheffield Company as a signal lamp-lighter, and remained so for about a year, and was subsequently a signalman for about four years. I have been a signalman at New Mills in the service of the Sheffield and Midland Joint Committee for seven years. On May 27th I came on duty at 6 a.m. to remain until 4 p.m. On may 26th I came on duty at the same time for the same number of hours. A special passenger train was booked to stop at New Mills to take up passengers for Matlock. After this train had left, the station-master told me that several passsengers were left behind, and that the following special for Matlock must be stopped to take them forward. When the Guide Bridge to Matlock train was approaching I kept my signals at danger until the train was near to the home-signal, and I then lowered that signal for it to enter the station. I do not remember whether I lowered the starting-signal for the train to leave or not, but about a minute after the train had arrived I received the shunt-signal from Strines for an up express. The Guide Bridge train had drawn well forward, and I came to the conclusion that the train had passed clear of the cross-over road points at the Manchester end of the station. I moved the lever working these points slightly, and found that the points were quite free, and I therefore decided that the train had passed over them. After pulling over the points, I signalled the driver to set back to shunt for the express, relying upon the driver not doing so until the passengers on the up platform were all right. When the train had set back a short distance a carriage left the rails, and I afterwards ascertained that I must have pulled over the points between the two bogie trucks of a carriage. The engine was past my cabin when it came to a stand. I did not know the length of the train. I could not see the west cross-over road, as the points were hidden from me by the train. I did not get any signal from the rear guard. I could not see the sidings and did not know what condition they were in. The train was an unusually long one. I shunted a Midland special train on the previous day through the same cross-over road for the same express, and a Manchester, Sheffield, and Lincolnshire special on Thursday for the 10.20 a.m. express from Manchester. I cannot be sure whether this was a full or an empty train. Those are the only two trains I have shunted during

that week. There is one train a day which stops at New Mills, and for that train the engine has to run round. This is a short train and there is plenty of room for it between the two cross-over roads. During Whit week empty trains come to New Mills for the engine to come round, or to stand, and these trains are often too long to stand between the cross-over road, so that the engine has to run forward to New Mills junction to get round. There was very heavy traffic on the day of the accident.

Conclusion.

This slight accident was due to the action of signalman Charles Platts, who, having to shunt the up Midland excursion train to clear the line for an up express, pulled over the west cross-over road points when the third vehicle from the rear of the train was standing over them, so that, when by his orders the train was set back, the two rear vehicles, and the rear bogie of the vehicle in front of them, ran back along the main line, while the front bogie of this vehicle was turned through the cross-over road, and was dragged off the rails.

Before shunting the train it was the duty of the signalman to ascertain that the rear vehicle was ahead of the points instead of taking it for granted that it was so, and, as, owing to the position of the train, he was unable to see the points from his signal-cabin, he should have informed the guard in charge of his intention to shunt the train, and have awaited a signal from him that it was clear of the cross-over road.

No doubt the signalman, being anxious to clear the line as soon as possible, and seeing the engine was well past his cabin, assumed too hastily that the rear vehicle had passed the points, as would have been the case if the train had been one of the usual length. He had at the time been on duty for about three hours.

It seems that on ordinary days it is most unusual to have to adopt the objectionable practice of shunting trains on to the wrong line at this station, and that a train of the ordinary length could be shunted into a siding, but on this day and the previous days, being the two days before Whitsunday, the trains were unusually numerous, and of much more than the usual length.

Judging from the evidence of the signalman, who has, I am informed, resigned his appointment, it might be well to alter the position of one of the cross-over roads at New Mills so as to give a sufficient distance for a long train to stand between them.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

(Signed) F. A. Marindin,
Major, R.E.

APPENDIX.

Particulars of Damage to Rolling Stock and Permanent-way.

Rolling Stock.	*Permanent-way.*
Midland bogie third, No. 356.—Two end panels, and one vacuum iron pipe broken; one headstock slightly damaged, and one screw coupling shackle bent.	Two common chairs broken.

Printed copies of the above Report were sent to the Joint Companies on the 4th July.

SOUTH-EASTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
5th August 1893.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 20th June, the result of my enquiry into the causes of the accident which occurred on the 5th May at the Erith Lower Road level-crossing, on the North Kent line of the South-Eastern Railway.

In this case the 1.10 p.m. down passenger train from Charing Cross (1.20 p.m. from Cannon Street), viâ Blackheath, for Dartford, ran through one of the gates at this level-crossing, the train being brought to a stand when part of it was still on the level-crossing. At the time no one is stated to have complained of injury, but on

the 13th May Mr. Brampton, of Northumberland Heath, who had been a passenger in the train, died from meningitis of the spinal cord and cerebellum, stated by the coroner's jury to have been "the effect of a jerk while riding in a train which collided with the Lower Road level-crossing gate, Erith."

The only damage sustained by the train was that the panel of the front brake-compartment was pierced by a fragment of the gate passing through it, and that a lamp on the front of the engine was broken. The train consisted of an eight-wheeled tank-engine, running chimney in front, and 12 close-coupled vehicles, the first and last having brake-compartments, the four coupled wheels of the engine and all the wheels of the train being fitted with the automatic vacuum-brake.

The level-crossing gate was broken up.

Description.

The level-crossing in question is about half a mile on the up side of Erith station, and about the same distance on the down side of Belvedere station, the road crossing the railway at a considerable skew. The gates are two single wooden gates. The up gate completely closes the road, but not the line; the down gate, the one run into, closed completely either road or line. The gates are provided neither with discs nor with signals, but in the gate-house adjoining the level-crossing on the down side of the line and on the up side of the crossing, and in the gatekeeper's hut on the down side of the line and on the down side of the crossing, telegraph-bells are fixed, which ought to record all block-signals passing between Belvedere and Erith, and thus inform the gatekeeper when a train is approaching, it being customary after the ringing of a block-signal has been heard to allow no vehicles to cross the road until the train has passed.

The crossing is situated in a curve, and there are buildings, &c. adjacent to the line which prevent the gates being properly seen from an engine till they are approached to within about 300 yards.

Evidence.

1. *Edward Surrage*, driver; 28 years' service, 14 years driver.—I am well acquainted with the North Kent line. On May 5 I commenced work at 5.30 a.m., to sign off at 5.30 p.m. I took charge of the 1.10 p.m. passenger train from Charing Cross, viâ Blackheath, for Dartford at Cannon Street. My engine was No. 305, an eight-wheeled tank-engine, four wheels coupled in front, and a four-wheeled trailing bogie, weighing about 40 tons, in full working order. I do not know the weight on the coupled wheels. The engine was running chimney in front, my side being on the right. The train consisted of 12 vehicles, with a brake-carriage at each end of the train. The brake was the automatic vacuum-brake, applied to the four coupled wheels of the engine and to each of the wheels of the vehicles, which were, I believe, all four-wheelers. I think I could stop the train in 80 or 100 yards at 30 miles an hour on a level road. The working vacuum pressure is from 18 to 20 inches. We left Cannon Street at 1.21 p.m., one minute late, and I believe we left Belvedere at 2.11 p.m., also one minute late. The brake had acted perfectly at all the stops. On leaving Belvedere I found the line clear at the first two level-crossings, where I got hand-signals, and I was approaching the Lower Road crossing, Erith (about half a mile from Erith), at a speed of 30 miles an hour; when within about 100 yards of the gates, which I could not see on account of dust blowing from the road towards the river, I blew my whistle in accordance with custom, and then, the dust having slightly cleared, I saw the top part of the gate next Erith across the line, when about 30 yards off. I did not see either the gate-keeper or the other gate. On seeing the gate across the line I shut off steam and applied my brake with full force, and had done this before striking the gate. The gate was broken and was thrown outwards towards Erith, one of the fragments coming up on the engine, which stopped when the engine and two carriages were past the gate. No wheels left the rails, and no part of the gate fragments were entangled with the under part of the engine. I felt no shock as the engine struck the gate, and as the train was a close-coupled one I do not think the quick application of the brake could have caused any jerk or rebound in the train. I am in the habit of receiving a hand-signal at level-crossings, but in the absence of such a signal I have no instructions to stop. A piece of wood from the gate went through the front end panel of the guard's brake next the engine, near the level of the floor. The accident took place about 2.13 or 2.14 p.m. After getting off the engine I saw the gatekeeper by the side of the gate near his box. He said he saw himself in danger. He seemed excited, but not the worse for liquor. I saw no one complaining of injury. We were detained about 15 minutes, clearing the fragments from the van, &c., and then went on to Dartford. The gatekeeper did not mention to me the fact of the bell not ringing in his box.

2. *Anthony Hills*, fireman; seven years' service, three years fireman.—I had been with Surrage about three months before the accident on the 5th May, and I was with him on that day, my working hours being the same as his. My place on the engine was on the left when running chimney in front, which we were doing with the 1.20 p.m. train from Cannon Street for Dartford. All went right as far as Belvedere, the stops being all correctly made with the vacuum-brake, the gauge showing about 18 inches. I had been putting on coal after leaving Belvedere, and I was just going to look out on my side when Surrage said, about 35 yards from the gates, that they were open, he having whistled about 100 yards off. It was impossible to see the gate sooner than Surrage saw it, as the sun was shining on it and the dust was blowing across the line. The speed was about 30 miles an hour, and Surrage at once shut off steam and applied his brake in the usual manner, and I put

on my hand-brake. This was done before the engine struck the gate, of which the post is on the down side of the line. The gate was broken, and a piece of it struck the guard's brake, but only a few splinters came up on the foot-plate. The engine stopped with the third vehicle from the engine on the crossing. There was no jerk when the train stopped. I did not see the gatekeeper either before or after the accident. One of the lamps at the front of the engine was broken. I did not hear what passed between Surrage and the gatekeeper.

3. *Parker Richard Butcher*, guard; 24 years' service, 18 years guard.—I commenced work on 5th May at 4.30 a.m. to sign off at 2.22 p.m. I was rear-guard of the 1.10 p.m. train from Charing Cross for Dartford as far as Cannon Street, and front guard from Cannon Street. The train consisted of 12 vehicles all close coupled, the first and last being third-class brakes. The vehicles were all four-wheelers. The vacuum-brake could be applied from either brake compartment. We left Cannon Street at 1.21 p.m. and Belvedere at 2.11 p.m. The journey had gone all right as far as Belvedere, the stops having all been properly made with the vacuum-brake. As we approached the Erith Lower Road crossing I was looking out on the near side. I was about 20 yards from the gatehouse, the driver having whistled about 100 yards from it, when I crossed, according to custom, from the near to the off side of the compartment to get a view of the Erith distant-signal, and I had just got across when a fragment of the gate came through the front end of the van on the near side about six inches above the floor. It was a piece of wood, apparently belonging to the top rail, about 5 ft. long. It did not strike me, but I was struck by something in my left ear. I had felt the brake applied just before the van was struck. When the train stopped the sixth vehicle was, I think, standing on the crossing. The speed just before the application of the brake was 25 to 30 miles an hour. The stop was not a very sudden one, and did not throw me down. I noticed nothing to prevent the driver seeing the gates; the day was clear. I did not notice any dust blowing along the road. I think if I had gone across the van sooner I might have seen the gate across the line. I had no conversation with the gatekeeper after the accident. We were detained about 14 minutes, easing the brakes and clearing the fragments of the gate away. I heard no remark made about the telegraph bell not having rung in the gatekeeper's box. I do not know in what part of the train the deceased was riding. I heard no complaint of injury from anybody. The shock on striking the gate was very slight. The vacuum-gauge showed 18 to 20 inches all the way down. The accident occurred about 2.13 p.m. No complaint was made when the train stopped at Erith.

4. *Albert Wraight*, guard; 23 years' service, 19 years guard.—I came on duty at 4.30 a.m. to sign off at 2.22 p.m. I was rear guard of the 1.20 p.m. train from Cannon Street for Dartford on May 5th. The journey went right as far as Belvedere. As we were approaching the Lower Road crossing, Erith, I was not looking out, and the rather sudden stoppage of the train was the first I knew about the accident. I felt nothing but the application of the brake, the speed having been 30 miles an hour. I got out and went up to see what was the matter. I saw the gatekeeper, who said he had just let a horse and cart through and finding he could not save the gate he ran away to save himself. I do not remember his saying anything about the bell not ringing. I heard no complaints of injury either while stopping at the gates or afterwards at Erith.

5. *John Ernest Stradwick*, platelayer; two years' service.—I was appointed to take charge of the Lower Road crossing, Erith, about eight weeks before the accident, by Mr. Holton, the Erith station-master. I had been 13 weeks before this at North End level crossing, Erith. I worked no signals at either crossing. I cannot read or write. On the day of the accident I came on duty at 12.30 p.m., to remain till 7 p.m. I had been working as platelayer at Erith station from 6 a.m. till 11.30 a.m. I never had any rules with regard to working the gates. I did not know which was the proper way for the gates to remain closed, whether across the road or the railway, but as a rule I kept them closed across the railway to allow the road traffic to cross the line. There are telegraph bells, one in the gate-house and the other in the box, to tell when trains are coming in either direction. The bell in the box would not always ring. It would sometimes not ring three or four times a day. This applied to both up and down trains. I had not noticed it fail during the time I had been on duty on 5th May. In consequence of the bell not ringing properly I looked out more diligently for the trains than I should have done had the bell been trustworthy. I had spoken to Popple, the other gatekeeper, twice about the bell, the last time about a week before the accident. Telegraph lineman Brown had been to look at the bell a few days before the accident, and said he should have to bring a new bell, but this had not been supplied before the accident. My watch was broken, and I had no clock in the box to inform me of the time, but I knew pretty well the hours of the trains; an up goods train had passed about an hour before the accident, and for this train the bell had rung properly. I expected the next train would be a down train. After the passing of the up goods train and the 12.20 p.m. down train I kept the gates open for the road traffic to pass. I was sitting down in my box with both gates across the line when I heard the rattle of the down train close to the gate-house; before this I had heard no engine whistle. On hearing this train I ran to the gate next Erith to try and shut it across the road, but finding I could not get to it in time I ran back into the box to save myself, and just as I got into the box the engine hit the gate and broke it up; the train then stopping with about the middle carriage on the crossing. I had been sitting in the box for about an hour before the accident, except when I went out some time before to ease myself. I am quite sure I had not gone to sleep. I was listening for the bell, but it never rang, and I heard no whistle. I was alone at the time. Nothing had crossed along the road for 20 minutes to half an hour before the accident. As far as I recollect the day was dull at the time of the accident. It was not very windy, nor was much dust blowing. I had not heard the bell clicking while I was sitting in the box. It did sometimes click without actually ringing. I never asked Popple, and Popple never told me, what my duties were. I never noticed the bell ringing or clicking for the four times it must have been used for the down train.

6. *Mary Ellen Beadle.*—I reside at Erith, and I am 15 years old, and I was a passenger from Blackheath in the train leaving that station about 1.45 p.m. on the 5th May. I was travelling in a carriage near the back of the train. The train travelled as usual as far as Belvedere, and stopped at stations in the ordinary way. After leaving Belvedere the train proceeded at the same speed as usual until it was suddenly stopped at the Lower Road crossing, Erith. I was sitting with my face to the engine, and was not thrown forward. I was leaning on my umbrella. I do not remember feeling more than one jerk when the train stopped. There were six other girls in the same compartment as myself, and I did not notice any of these being thrown off their seats, and I heard none of them complain of injury. I was in a second-class carriage with the partition running up to the roof. The stop was rather quicker than I had felt it at the stations. I took no notice of the stop so as to cause me to look out.

7. *Jarvis Popple*, gateman; 37 years' service, 35 years gateman.—I have been 27 years gateman at Erith Lower Road crossing. I was on duty at this crossing on May 5 from 7 a.m. till 12.30 p.m., when I was relieved by Stradwick, and at 1.30 p.m. went to take up the duty at Church crossing, about 300 or 400 yards on the Erith side of the Lower Road crossing, to remain till 7 p.m. When I was there the accident took place. There are bells in the gate-house and box at Church crossing. The bell for the 1.10 p.m. down train rang properly four times at about 2.11 p.m., the time of the train leaving Belvedere. It is customary to allow no road crossings to take place after the bells. The gates at Church crossing are kept across the public road in their normal position. I observe the same rule at Lower Road crossing. I told Stradwick that he ought to keep the gates closed across the road, and if he kept them across the railway he would be acting contrary to what I had told him. Stradwick had complained to me of the bell not ringing in his box once about a fortnight before the accident. I spoke about this to one of the Erith signalmen, and it was looked to next morning. I have never found the bells fail when I have been on duty at the Lower Road crossing. I believe that the reason the block-signals were ordered to be given more slowly was in consequence of a report from my mate, John Owen. There is a book at each crossing gate in which any failure of the bells ought to be entered. The only entry is one relating to a down coal train on 27th April 1893, for which no signal was received till the engine was close to the gates; this was not a fault of the bell.

8. *John Owen*, gateman; 33 years' service, gatekeeper 28½ years.—I have been all the time at Church crossing, Erith, but I was not on duty there on May 5 when the accident occurred. I live at the gate-house, and went up to the spot directly after the accident, and got there before the train went away. I saw Stradwick, but asked him no questions. I heard him tell the station-master that he did not hear the bell ring for the down train, but that he could not say whether it rang or not. The station-master taxed him with being in his box, and the gates across the line, and he said he was waiting for a cart to come. At Church Road I have known bells fail to ring, but not repeatedly, and none recently. Last November I mentioned to the Erith station-master that the block-signals were given too quickly, and since then I have had no cause to complain. This was the last time I made any complaint. I got into the same carriage with the deceased at the crossing. This was the second carriage from the engine, a large open third-class. He was sitting face to the engine, with his back to the end of the carriage. He made no complaint of injury, and said he was glad no one was hurt. I saw no signs of drink about Stradwick. I heard the "In" signal, three beats, for the train given when it reached Erith, and I also heard the "in" signal for an up train before I left the crossing.

9. *Ernest Wilmot*.—I am a goods clerk in the Company's service, and was a passenger in the 1.10 p.m. down train on the 5th May, joining it at Woolwich. I was in the second carriage from the engine sitting with my back to it in the first compartment. All went right as far as Belvedere, the stops being as usual. On approaching Erith there was a more sudden stop than usual, but I was not aware that anything had been struck before we stopped. I did not notice the engine whistle before the stop. I felt no inconvenience whatever from the stop. There was only one other person in the carriage at the far end (the deceased) and he did not seem put about. After the train stopped I found out that we had run into the gate. I saw nothing of the gatekeeper. I saw Owen get into the carriage after we had stopped, and then get out again. The deceased spoke to me, but I heard him make no complaint about being injured.

10. *Richard Holton*, 28 years' service; 14 years station-master, 12 years at Erith.—The level crossings at Lower Road and Church Road are under my charge. After the death of gateman Hyde at Lower Road crossings I applied to the ganger for a man to do temporary duty there and Strathwick was sent to me by inspector of permanent-way Robins' orders. I made no enquiries whether he could read or write, but I knew he had been employed as gatekeeper before at North End. I could not say whether it was my duty or Robins' to see that he was aware of what he had to do. I understood that the rules had been read over to him when he was at North End. On the 5th May seeing the train standing at Lower Road crossing I went up to it before it had moved. I saw Strathwick and thought him to be sober. He said he was in his box, smoking his pipe and did not hear the bell ring and that he was expecting a cart to cross, but that he had no time to close the gates without risking his own life. I have no idea whether he was asleep. I had had no recent complaints about the bells not ringing in the gate boxes. There had been a complaint made some time before the accident about the bells not ringing properly, and in consequence it was arranged that the bell signals should be given more slowly.

11. *Thomas Ashbee*, 13 years' service, 10 years signalman.—I have been 10 years in Belvedere cabin, where I came on duty at 6 a.m. on the 5th May for 12 hours. I remember giving the signals for the 1.10 p.m. down train for Dartford at 2.11 p.m. The signal was given with two beats and was acknowledged with two; the "in" signal, three beats, was received at about 2.31 p.m. The signals for the up trains passed correctly. I had heard no complaints about these signals not being repeated in the level crossing boxes, but two or three days before the accident I had received instructions to give the block signals more slowly.

12. *Charles Brown*, telegraph inspector for the North Kent district.—I have held this position about 10 years. On April 29 I was informed by signalman Hayman at Erith, where I was on other duty, that a complaint had been made about the bell not ringing properly in the box at Erith Lower Road crossing. I went to the station-master to ask him about it and he said he had heard no complaint, but would ask the gateman when he came from dinner and tell me if necessary. I heard nothing from the station-master, but on the following Monday I went to Erith and Belvedere stations and cleaned the contact-makers, &c. I also went to the Lower Road gate and heard the bells ring, and they seemed to work properly in the box. I told Stradwick that I would change the dome of the bell to make it sound sharper, but I had not done so before the accident, not considering that there was any urgency about it. The bell having been again reported as not ringing after the accident, it has been removed and another substituted. There are many more cells in the batteries at Belvedere and Erith than is customary, in consequence of the level crossing bells.

Conclusion.

This collision of a down passenger train with one of the Erith Lower Road level-crossing gates, together with the consequent quick stoppage of the train on the driver

seeing that the gate was across the line, was primarily due to the negligence of the gatekeeper, a platelayer named Stradwick, who had been appointed to take charge of the gates about two months before the accident, and who had been previously employed for three months in a similar capacity at the Erith North End level-crossing.

According to his evidence, after an up goods train had passed nearly an hour before the accident, the telegraph-bell having rung properly for this train, as well as for a down passenger train due to pass at about 1.20 p.m. (nearly an hour before the next down train, nothing being due on the up line till 2.24 p.m.), he opened the gates to allow the road traffic to cross the railway, and then sat down in his box to wait till the next train was warned, leaving it only once to go to the rear. He then heard the rattle of a down train close to the crossing, without having noticed any previous ringing of the bell or any whistle from the engine. On hearing this he ran out to try and close the gate next Erith across the road (the other gate was clear of the down line), but finding he would not have time to do so he ran back to his box to get out of the way, and had just got to it when the engine of the train struck the gate and broke it up, the train stopping with about the middle carriage of the train on the crossing.

Stradwick declares he was not asleep when he was roused by the approach of the train. He states that he had not been informed of any rules for the working of the gates, and did not know which was proper way for them to stand closed when nothing was passing either on the road or railway, but that, as a rule, he kept them closed across the railway. With regard to the telegraph bell, he said he had often known it to fail to ring, sometimes as often as three or four times in a day, but that it had behaved properly on the 5th May until it failed to warn him of the approach of the train which met with the accident, and for which train he did not even hear it click, although four beats must have passed between the Belvedere and Erith signalmen. He further stated that about a week before the accident telegraph lineman Brown had been to examine the bell and said that he should have to supply a new one, but that the bell had not been changed before the accident. Stradwick also informed me that he had never asked gatekeeper Popple, the man in regular charge of the crossing, what his duties were, and that Popple had never told him, a statement denied by Popple, who declares he told Stradwick that he ought to keep the gates normally closed across the *road*, and that if he kept them closed across the *railway* he would be acting contrary to rule. Popple further adds that Stradwick had only once complained to him about the bell not ringing, which complaint was duly reported, and the bell looked at next day. Popple also adds that the bell for the 1.10 p.m. down train had duly rung in the Church crossing (between the Lower Road crossing and Erith, where he was on duty at the time of the accident) when the train left Belvedere.

Another gatekeeper from Church crossing, who was off duty at the time, went up to the Lower Road crossing after the accident, but before the train had left it. On the train reaching Erith he heard the "1n" signal (three beats) ring on the bell in the crossing-box, and he also heard the "In" signal for an up train before he left the spot.

The signalman at Belvedere remembers giving the signal (two beats) for the 1.10 p.m. down train at 2.11 p.m., and had it duly acknowledged with two beats from Erith. The "In" signal, three beats, was received from Erith at 2.31 p.m. A few days before the accident he had been instructed to give the beats more slowly.

The telegraph inspector for the North Kent district had, in consequence of a complaint, inspected the bell in the Lower Road crossing-box on Monday the 1st May, and found the bell was working properly, but he informed Stradwick that he would change the dome of the bell, so as to make it give a sharper sound; the change had not been made before the accident, which occurred four days afterwards, as Brown did not consider there was any urgency in the matter. There having been a further complaint made of the bell after the accident it was then changed; owing probably to some defect in the spring it appears to have only clicked, and not rung properly on one occasion.

On a careful consideration of this evidence I have come to the conclusion that Stradwick was not paying proper attention to his duties as gatekeeper when the 1.10 p.m. down train from Charing Cross was approaching the Erith Lower Road crossing. He had neglected to close the gates across the highway after a vehicle had passed about half an hour before the accident, declaring he did not know that the gates ought to be kept so closed, although another gatekeeper declares he had told him how they ought to be kept, viz., closed across the highway. Stradwick also says that the bell having failed to ring he heard nothing of the train till it was so

close upon the gates that he had no time to close the one next Erith (the only one which fouled the down line) without endangering his own safety. As this bell had rung properly for the trains which passed shortly before the accident, and as the bell for this very train rang properly in the crossing-box at the next crossing, and in the Erith Lower Road box, when the "In" signal was given upon the train reaching Erith about 19 minutes after the accident, it is, I think, very improbable that it neither rang nor clicked when the signal for the train was given from Belvedere, and I have very little doubt but that Stradwick had fallen asleep while sitting in his box, and was roused up by the rattle of the train when close to the gates. Stradwick had been on duty at his work as platelayer from 6 a.m. to 11.30 a.m., and had taken up the duty of gatekeeper at Edith Lower Road crossing at 12.30 p.m., to remain till 7 p.m. His day's work had thus commenced rather more than eight hours before the accident. He had been employed eight weeks at this crossing and 13 weeks at one on the other side of Erith. He stated that he could neither read nor write, and he was therefore not a proper man to be placed in charge of a level-crossing, especially as the rules relating to his duties, of which rules there was a copy in the box, do not appear to have been properly explained to him.

There was no doubt some imperfection in the working of the telegraph bell in Stradwick's box, and that it had failed to ring properly on certain occasions, though hardly I think on the present one; when it failed to ring it is most probable that it at any rate clicked.

As stated above, the gate which was run into could be seen, if across the line, by a driver keeping a good look out for about 300 yards, or in ample time to pull up a train proceeding at a speed of 30 miles an hour fitted with continuous-brakes, as in the present case, before reaching it. Surrage, the driver of the train, whose place was on the right side of the foot-plate of his engine, states that he whistled in accordance with custom when approaching the Erith Lower Road crossing when about 100 yards from it, the speed being about 30 miles an hour, but that on account of dust blowing along the road, he did not see that the gate was across the line till within about 30 yards of it, when he immediately shut off steam and applied the automatic vacuum-brake with full force, the train being stopped without any perceptible jerk or rebound, when the engine and first two carriages had passed over the crossing. Surrage states that he felt no shock from the engine striking the gate, that he saw nothing of the gate-keeper till after the accident, when he looked excited, but said nothing about the telegraph-bell not having rung; that his brake was in good order and had behaved properly at all the stops after leaving Cannon Street.

Hills, Surrage's fireman, says that he had been firing after leaving Belvedere, and was just going to look out on his (the left) side, when Surrage, who had whistled about 100 yards from the gates, said, when about 35 yards from them, that they were open; his evidence otherwise agrees with that of Surrage, except that he did not hear what conversation passed between him and the gatekeeper.

Butcher, the front guard, had just crossed over from the near to the off side of the brake compartment to get a view of the Erith distant-signal, when a fragment of the gate came through the front end of the compartment, just before which he had felt the brake applied, the speed being from 25 to 30 miles an hour. He did not feel the stop to be a very sudden one, and was not thrown down by it. He believes the sixth vehicle was on the crossing when the train stopped. Butcher heard no one complain of injury either at the spot or afterwards at Erith. He noticed nothing to prevent the driver getting a proper view of the gates as he approached them, and thinks if he had looked out sooner he would himself have seen the gate across the line.

Wraight, the rear guard, was not looking out as they were approaching the level-crossing, but felt the train being rather suddenly stopped by the application of the continuous brake, the speed having been about 30 miles an hour. He saw the gate-keeper on going to find out what had happened, and did not hear him say anything about the telegraph bell not having rung. He heard no complaints of injury either at the spot or afterwards at Erith.

I fear driver Surrage could not have been keeping a good look out as he approached the crossing, or otherwise he might have seen the gate across the line in time to have stopped short of it. He has been 28 years in the service and 14 years a driver; he had come on duty at 5.30 a.m. on the 5th May to sign off at 5.30 p.m., and had therefore been on duty about $8\frac{3}{4}$ hours when the accident took place.

In addition to the evidence of the driver, fireman, and guards of the train as to the stopping of the train, although quick, not being especially so, a goods clerk in

the same third-class carriage (with open compartments) as the deceased, the second from the engine, states that he felt no inconvenience from the stop, nor, so far as he saw, did the deceased, who was the only other passenger in the carriage except himself. The deceased spoke to him but made no complaint about being injured.

A young lady returning from the high school at Blackheath to Erith also gave evidence as to the train being suddenly stopped at the crossing. She stated that the stop was rather a quicker one than usual, but that neither she nor six companions who were with her were inconvenienced by it.

From this evidence it would appear that the collision with the gate was, as might be expected, hardly to be felt, but that any injury sustained by the deceased must have been caused by the sudden stoppage of the train, though before leaving Erith station he does not seem to have complained that he had been injured.

In conclusion, I have to remark that one of the gates at the Erith Lower Road crossing does not comply with the requirement that it should completely close either the line or high way, and should be altered accordingly. As the gates cannot be well seen when being approached by the drivers of either up or down trains, they should be provided with signals interlocked with them.

A red target or disc should also be placed on each gate so as to make them as conspicuous as possible to the drivers of both trains and vehicles.

Had the gates been provided with interlocked signals or even with targets or discs, this accident, notwithstanding the negligence of the gatekeeper, would probably have been prevented.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

(Signed) C. S. Hutchinson,
Major-General, R.E.

Printed Copies of the above Report were sent to the Company on the 29th August.

RETURNS

OF

ACCIDENTS AND CASUALTIES

AS REPORTED TO THE BOARD OF TRADE BY THE SEVERAL RAILWAY COMPANIES IN THE UNITED KINGDOM,

During the Nine Months ending 30th September 1893,

In pursuance of the Regulation of Railways Act (1871), 34 & 35 Vict. cap. 78;

TOGETHER WITH

REPORTS OF THE INSPECTING OFFICERS OF THE RAILWAY DEPARTMENT TO THE BOARD OF TRADE

UPON

CERTAIN ACCIDENTS

Which were inquired into.

Presented to both Houses of Parliament by Command of Her Majesty.

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TABLE OF CONTENTS.

Page

SUMMARY of ACCIDENTS and CASUALTIES reported to the BOARD of TRADE during the Nine Months ending 30th September 1893 - - - - - - - 3

TABLES:

No. 1. General Total.—Number of Persons reported as killed or injured on the Railways of the United Kingdom, distinguishing between Passengers, Servants of the Companies or of Contractors, and other Persons; and distinguishing also in the case of the two former Classes between Accidents caused by accidents to trains, rolling-stock, permanent-way, &c., and Accidents happening otherwise - - - - - - - - - 7

No. 2. Number of Persons reported as killed or injured in the United Kingdom, by the travelling of trains or the movement of vehicles used exclusively upon Railways, distinguishing between Passengers, Servants of Railway Companies, and other Persons; and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury - 8

No. 3. Accidents to Trains, Rolling-Stock, Permanent-Way, &c. on the Railways in the United Kingdom, distinguishing the different Classes of Accidents, and the Number of Passengers and others, and of Servants of Railway Companies, killed or injured in each Class of Accident - 9

No. 4. Accidents to Trains, Rolling-Stock, Permanent-Way, &c. on the Railways in the United Kingdom, distinguishing the different Classes of Accidents, the different Railways on which the same have occurred, and the Number of Passengers and others, and of Servants of Railway Companies, killed or injured on each Railway by those Accidents - - - 10

No. 5. Number of Servants of Railway Companies and Contractors reported as killed or injured on the Railways in the United Kingdom, by the travelling of trains or the movement of vehicles used exclusively upon Railways, distinguishing the Number which have occurred on each Railway or System of Railway, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury - - - - 14

No. 6. Table showing the different occupations of Servants of Railway Companies and Contractors who were killed or injured, and classifying their injuries as far as practicable - 18

No. 7. Number of Persons reported as having been killed or injured whilst upon the Companies' premises, by accidents in which the movement of vehicles used exclusively upon Railways was not concerned, distinguishing between Passengers, Servants of Companies, and other Persons; and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury - - - - - - - - 19

REPORTS ON ACCIDENTS INQUIRED INTO - - - - - - 21

Summary of Accidents and Casualties which have been reported to the Board of Trade as having occurred upon the Railways in the United Kingdom during the Nine Months ending 30th September 1893.

I.—Accidents to Trains, Rolling-Stock, Permanent-Way, &c.

Accidents to trains, rolling-stock, permanent-way, &c. caused the death of 24 persons and injury to 466 persons, viz. :—

	Killed.	Injured.	*Total for the corresponding Period in 1892.*	
			Killed.	*Injured.*
Passengers	17	410	*12*	*476*
Servants of companies	7	56	*8*	*66*
Total	24	466	*20*	*542*

During the nine months there were reported 25 collisions between passenger trains or parts of passenger trains, by which 82 passengers and 5 servants were injured; 24 collisions between passenger trains and goods or mineral trains, &c., by which 121 passengers and 9 servants were injured; 11 collisions between goods trains or parts of goods trains, by which 10 servants were injured; 1 case of a train coming in contact with projections from other trains travelling on parallel lines, by which 1 servant was killed and 3 passengers were injured; 44 cases of passenger trains or parts of passenger trains leaving the rails, by which 15 passengers and 5 servants were killed and 77 passengers and 11 servants were injured; 10 cases of goods trains or parts of goods trains leaving the rails, by which 1 servant was killed and 2 were injured; 4 cases of trains or engines travelling in the wrong direction through points, by which 1 passenger and 1 servant were injured; 20 cases of trains running into stations or sidings at too high a speed, by which 111 passengers and 5 servants were injured; 115 cases of trains running over cattle* or other obstructions on the line, by which 1 person was killed and 8 passengers and other persons were injured; 27 cases of trains running through gates at level crossings, by which 1 passenger was killed and 1 passenger and 1 servant were injured; 2 cases of the bursting of tubes of engines by which 1 servant was injured; 5 cases of the failure of machinery, springs, &c., of engines, by which 2 servants were injured; 381 failures of tyres, by which 2 passengers and 1 servant were injured; 15 failures of couplings, by which 1 passenger and 5 servants were injured; and 2 other accidents by which 3 passengers and 3 servants were injured.

The following cases were also reported, but they involved no personal injury:—1 case of the failure of a wheel; 133 failures of axles; 193 failures of rails; 3 failures of tunnels, &c.; 1 case of the flooding of a portion of the permanent way; 4 slips in cuttings or embankments; 3 cases of fires in trains; and 4 fires at stations.

Of the 381 tyres which failed, 17 were engine-tyres, 7 were tender-tyres, 3 were coach-tyres, 8 were van-tyres, and 346 were waggon-tyres; of the waggons, 302 belonged to owners other than the Railway Companies; 270 tyres were made of iron, 110 of steel, and in one case the material was not stated; 5 of the tyres were fastened to the wheels by Mansell's patent method, 1 of which left its wheel when it failed; 6 by Gibson's patent method; 323 by bolts or rivets, 4 of which left their wheels when they failed; 41 by other methods, 3 of which left their wheels when they failed; and 6 by methods which were not stated; 29 tyres broke at rivet-holes, 1 in the weld, 85 in the solid, and 266 split longitudinally or bulged.

* During the six months, 29 horses, 26 beasts and cows, 74 sheep, 3 donkeys, 1 pig, and 1 goat were run over and killed, and 2 horses, 2 beasts, and 4 sheep were injured.

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Of the 133 axles which failed, 86 were engine axles, viz., 67 crank or driving, and 19 leading or trailing; 10 were tender axles, 3 were coach axles, and 34 were waggon axles; of the waggons, 11 belonged to owners other than the Railway Companies. Of the 67 crank or driving axles, 24 were made of iron and 43 of steel. The average mileage of 23 crank or driving axles made of iron was 264,170 miles, and of 41 crank or driving axles made of steel 289,069 miles.

Of the 193 rails which broke, 68 were double-headed, 114 were single-headed, 2 were of the bridge pattern, and 9 were Vignoles' rails; of the double-headed rails 39 had been turned; 10 rails were made of iron and 183 of steel.

II.—Accidents to Passengers from Causes other than Accidents to Trains, Rolling-Stock, Permanent-Way, &c., including Accidents from their own want of Caution or Misconduct; Accidents to Persons passing over Level-Crossings; Trespassers; and Others.

Of the 391 persons killed and 701 injured in this division, 58 of the killed and 514 of the injured were passengers. Of these 13 were killed and 34 injured by falling between carriages and platforms, viz., 6 killed and 16 injured when getting into, and 7 killed and 18 injured when alighting from, trains; 8 were killed and 304 injured by falling on to platforms, ballast, &c., viz., 3 killed and 35 injured when getting into, and 5 killed and 269 injured when alighting from, trains; 14 were killed and 12 injured whilst passing over the line at stations; 1 was killed and 51 injured by the closing of carriage doors; 8 were killed and 32 injured by falling out of carriages during the travelling of trains; and 14 were killed and 81 injured from other causes. 45 persons were killed and 18 injured whilst passing over railways at level-crossings, viz., 30 killed and 12 injured at public level-crossings, 8 killed and 4 injured at occupation-crossings, and 7 killed and 2 injured at foot-crossings. 199 persons were killed and 104 injured when trespassing on the railways; 66 persons committed suicide on railways; and of other persons not specifically classed, but mostly private people having business on the companies' premises, 23 were killed and 65 injured.

III.—Accidents to Servants in the Employ of Railway Companies or Contractors, caused by the Travelling of Trains or the Movement of Vehicles used exclusively upon Railways.

During the nine months there were 325 servants of companies or contractors reported as having been killed and 1,862 injured, in addition to those included in Division I. Of these 7 were killed and 216 injured whilst coupling or uncoupling vehicles; 5 were killed and 18 injured by coming in contact, whilst riding on vehicles during shunting, with other vehicles, &c. standing on adjacent lines; 17 were injured whilst passing over or standing upon buffers during shunting; 10 were killed and 146 injured in getting on or off, or by falling off engines, waggons, &c. during shunting; 5 were killed and 123 injured whilst breaking, spragging, or chocking wheels; 1 was killed and 22 injured whilst attending to ground-points, marshalling trains, &c.; 15 were killed and 170 injured whilst moving vehicles by capstans, turn-tables, props, &c. during shunting, and 52 were killed and 329 injured by various other accidents during shunting operations; 4 were killed and 37 injured by falling off engines, &c. during the travelling of trains; 2 were killed and 32 injured by coming in contact with over-bridges or erections on the sides of the line during the travelling of trains; 4 were killed and 77 injured whilst getting on or off engines, vans, &c., during the travelling of trains; 7 were killed and 304 injured whilst attending to, or by the failure of, machinery, &c. of engines in steam; 53 were killed and 60 injured whilst working on the permanent-way, sidings, &c.; 3 were killed and 4 injured whilst attending to level-crossing gates; 112 were killed and 127 injured whilst walking, crossing, or standing on the line on duty; 8 were killed and 35 injured by being caught between vehicles; 10 were killed and 33 injured by falling or being caught between trains and platforms, walls, &c.; 25 were killed and 9 injured whilst walking, &c. on the line on the way home or to work; and 2 were killed and 103 injured from various other causes.

Altogether, the number of persons killed and injured on railways in the United Kingdom in the course of public traffic, during the nine months ending 30th September 1893, as reported to the Board of Trade, was as follows :—

	Killed.	Injured.	*Total for the corresponding Period in 1892.*		Increase.		Decrease.	
			Killed.	*Injured.*	Killed.	Injured.	Killed.	Injured.
Passengers:								
From accidents to trains, rolling-stock, permanent-way, &c.	17	410	*12*	*476*	5	—	—	66
By accidents from other causes -	58	514	*76*	*528*	—	—	18	14
Servants of companies or contractors :*								
From accidents to trains, rolling-stock, permanent-way, &c.	7	56	*8*	*66*	—	—	1	10
By accidents from other causes -	325	1,862	*382*	*1,942*	—	—	57	80
Persons passing over railways at level-crossings.	45	18	*58*	*18*	—	—	13	—
Trespassers (including suicides) - -	265	104	*245*	*92*	20	12	—	—
Other persons not coming in above classification.	23	65	*32*	*59*	—	6	9	—
Total - - - -	740	3,029	*813*	*3,181*	—	—	73	152

* Of contractors' servants 11 were killed and 12 injured.

Note.—In addition to the above, the Railway Companies have reported to the Board of Trade, in pursuance of the 6th Section of the Regulation of Railways Act, 1871, the following accidents which occurred upon their premises, but in which the movement of vehicles used exclusively upon railways was not concerned, namely :—3 passengers killed and 103 injured whilst ascending or descending steps at stations; 29 injured by being struck by barrows, falling over packages, &c. on station platforms; 21 injured by falling off platforms; and 3 killed and 58 injured from other causes. Of servants of companies or contractors, 6 killed and 969 injured whilst loading, unloading, or sheeting waggons; 179 injured whilst moving or carrying goods in warehouses, &c.; 3 killed and 100 injured whilst working at cranes or capstans; 3 killed and 134 injured by the falling of waggon-doors, lamps, bales of goods, &c.; 3 killed and 219 injured by falling off, or when getting on or off, stationary engines or vehicles; 13 killed and 286 injured by falling off platforms, ladders, scaffolds, &c.; 3 killed and 233 injured by stumbling whilst walking on the line or platforms; 1 killed and 172 injured whilst attending to stationary engines in sheds; 1 killed and 38 injured by being trampled on or kicked by horses; 9 killed and 492 injured whilst working on the line or in sidings; and 4 killed and 301 injured from various other causes. Of other persons, most of whom were transacting business on the companies' premises, 15 were killed and 134 injured—making a total in this class of accidents of 67 persons killed and 3,468 injured.

Thus the total number of personal accidents reported to the Board of Trade by the several Railway Companies during the nine months amounts to 807 persons killed and 6,497 injured.

TABLE No. 1.

GENERAL TOTAL.

NUMBER of PERSONS reported, during the Nine Months ending 30th September 1893, as KILLED or INJURED on the RAILWAYS of the UNITED KINGDOM, distinguishing between PASSENGERS, SERVANTS of the COMPANIES or of CONTRACTORS, and OTHER PERSONS; and distinguishing also in the case of the Two former Classes between ACCIDENTS caused by ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c., and ACCIDENTS happening otherwise.

	England and Wales.		Scotland.		Ireland.		United Kingdom.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS:—								
From accidents to trains, rolling-stock, permanent-way, &c. -	17	365	–	31	–	14	17	410
By accidents from other causes, including accidents from their own want of caution or misconduct - - -	50	471	5	37	3	6	58	514
SERVANTS:—								
From accidents to trains, rolling-stock, permanent-way, &c. -	2	43	2	12	3	1	7	56
By accidents from other causes, including accidents from their own want of caution or misconduct - - -	259	1,629	50	212	16	21	325	1,862
OTHER PERSONS:—								
Whilst passing over railways at level-crossings - -	39	16	5	2	1	–	45	18
Trespassers - - -	147	71	44	31	8	2	199	104
Suicides - - - -	53	–	12	–	1	–	66	–
Miscellaneous, not included in either of the above - -	19	54	2	11	2	–	23	65
TOTAL - -	586	2,649	120	336	34	44	740	3,029

N.B.—The Board of Trade state the cause of accident as returned by the Companies, but do not guarantee or otherwise adopt the statement, except in cases where an official inquiry has been held.

TABLE No. 2.

NUMBER of PERSONS reported, during the Nine Months ending 30th September 1893, as KILLED or INJURED in the UNITED KINGDOM by the TRAVELLING of TRAINS or the MOVEMENT of VEHICLES used exclusively upon RAILWAYS, distinguishing between PASSENGERS, SERVANTS of RAILWAY COMPANIES, and OTHER PERSONS, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury.

	England and Wales.		Scotland.		Ireland.		United Kingdom.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS:—								
From accidents to trains, &c., *see Table No. 3*	17	365	–	31	–	14	17	410
From falling between trains and platforms	10	26	1	8	2	–	13	34
From falling on to the platform, ballast, &c. when getting into or out of trains	7	290	1	14	–	–	8	304
Whilst crossing the line at stations	12	12	2	–	–	–	14	12
By the closing of carriage doors	1	49	–	2	–	–	1	51
From falling out of carriages during the travelling of trains	6	23	1	5	1	4	8	32
By other accidents	14	71	–	8	–	2	14	81
TOTAL	67	836	5	68	3	20	75	924
SERVANTS:—								
From accidents to trains, &c., *see Table No. 3*	2	43	2	12	3	1	7	56
Whilst coupling or uncoupling vehicles	6	177	1	34	–	5	7	216
By coming in contact, whilst riding on vehicles during shunting, with other vehicles, &c. standing on adjacent lines	4	14	1	4	–	–	5	18
Whilst passing over or standing upon buffers during shunting	–	6	–	11	–	–	–	17
When getting on or off, or falling off, engines, waggons, &c. during shunting	8	123	2	20	–	3	10	146
Whilst braking, spragging, or chocking wheels	4	105	1	17	–	1	5	123
Whilst attending to ground-points, marshalling trains, &c.	1	18	–	3	–	1	1	22
Whilst moving vehicles by capstans, turn-tables, props, &c. during shunting	10	158	4	11	1	1	15	170
By other accidents during shunting operations, not included in the preceding	46	294	2	34	4	1	52	329
From falling off engines, &c. during the travelling of trains	3	27	–	9	1	1	4	37
By coming in contact with over-bridges or erections on the sides of the line during the travelling of trains	2	22	–	9	–	1	2	32
When getting on or off engines, vans, &c. during the travelling of trains	3	67	1	9	–	1	4	77
Whilst attending to, or by the failure of, machinery, &c. of engines in steam	7	291	–	13	–	–	7	304
Whilst working on the permanent-way, sidings, &c.	45	49	7	9	1	2	53	60
Whilst attending to gates at level-crossings	1	4	1	–	1	–	3	4
Whilst walking, crossing, or standing on the line on duty	84	110	23	17	5	–	112	127
From being caught between vehicles	8	30	–	3	–	2	8	35
From falling or being caught between trains and platforms, walls, &c.	8	28	1	5	1	–	10	33
Whilst walking, &c. along the line on the way home or to work	18	8	5	–	2	1	25	9
Miscellaneous	1	98	1	4	–	1	2	103
TOTAL	261	1,672	52	224	19	22	332	1,918
OTHER PERSONS:—								
Whilst passing over railways at level-crossings	39	16	5	2	1	–	45	18
Trespassers	147	71	44	31	8	2	199	104
Suicides	53	–	12	–	1	–	66	–
Miscellaneous	19	54	2	11	2	–	23	65
TOTAL	258	141	63	44	12	2	333	187
SUMMARY:—								
Passengers	67	836	5	68	3	20	75	924
Servants	261	1,672	52	224	19	22	332	1,918
Other persons	258	141	63	44	12	2	333	187
TOTAL ALL CLASSES	586	2,649	120	336	34	44	740	3,029

TABLE No. 3.

DENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c. reported, during the Nine Months ending 30th September 1893 as having occurred on the RAILWAYS in the UNITED KINGDOM, distinguishing the different Classes of Accident, and the Number of Passengers and others, and of Servants of Railway Companies, KILLED or INJURED in each Class of Accident.

—	NUMBER OF CASES.				NUMBER OF PASSENGERS AND OTHERS.								NUMBER OF SERVANTS.							
	England and Wales.	Scotland.	Ireland.	United Kingdom.	England and Wales.		Scotland.		Ireland.		United Kingdom.		England and Wales.		Scotland.		Ireland.		United Kingdom.	
					Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
ons between passenger ns or parts of passenger ns - - - -	21	4	-	25	-	67	-	15	-	-	-	82	-	1	-	4	-	-	-	5
ons between passenger ns and goods or mineral ns, engines, and vehicles ding foul of the line -	20	3	1	24	-	118	-	3	-	-	-	121	-	7	-	2	-	-	-	9
ons between goods trains arts of goods trains -	9	2	-	11	-	-	-	-	-	-	-	-	-	9	-	1	-	-	-	10
coming in contact with ections from other trains elling on parallel lines -	1	-	-	1	-	3	-	-	-	-	-	3	1	-	-	-	-	-	1	-
ger trains or parts of enger trains leaving the - - -	27	9	8	44	15	62	-	1	-	14	15	77	1	11	1	-	3	-	5	11
trains or parts of goods s, engines, &c. leaving ails - - -	6	2	2	10	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	2
or engines travelling in wrong direction through ts - - - -	2	2	-	4	-	1	-	-	-	-	-	1	-	-	-	1	-	-	-	1
running into stations idings at too high a d - - -	18	2	-	20	-	101	-	10	-	-	-	111	-	5	-	-	-	-	-	5
running over cattle or obstructions on the line	77	31	7	115	1	6	-	2	-	-	1	8	-	-	-	-	-	-	-	-
running through gates vel-crossings - -	26	-	1	27	1	1	-	-	-	-	1	1	-	1	-	-	-	-	-	1
ursting of boilers or , &c. of engines -	1	-	1	2	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
ailure of machinery, gs, &c. of engines -	4	-	1	5	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	2
lure of tyres - -	359	21	1	381	-	2	-	-	-	-	-	2	-	-	-	1	-	-	-	1
„ wheels -	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
„ axles - -	89	38	6	133	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
„ brake apparatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
„ couplings -	13	1	1	15	-	1	-	-	-	-	-	1	-	3	-	2	-	-	-	5
„ ropes used in working inclines	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
„ tunnels, bridges, viaducts, culverts, &c.	1	2	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ails - - -	162	26	5	193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
oding of portions of nent-way - -	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cuttings or embank- - - -	4	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s - -	2	1	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
stations or involving to bridges or viaducts	4	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ents -	1	1	-	2	-	3	-	-	-	-	-	3	-	3	-	-	-	-	-	3
TOTAL -				-	17	365	-	31	-	14	17	410	2	42	2	12	3	1	7	56

TABLE No. 4.

ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c. on the RAILWAYS in the UNITED KINGDOM, reported
RAILWAYS on which the same have occurred, and the Number of Passengers and others, and of

NAME OF COMPANY.	Collisions between passenger trains or parts of passenger trains.	Collisions between passenger trains and goods or mineral trains, engines, &c.	Collisions between goods trains or parts of goods trains.	Trains coming in contact with projections from other trains travelling on parallel lines.	Passenger trains or parts of passenger trains leaving the rails.	Goods trains or parts of goods trains, engines, &c. leaving the rails.	Trains or engines travelling in the wrong direction through points.	Trains running into stations or sidings at too high a speed.	Trains running over cattle or other obstructions on the line.	Trains running through gates at level-crossings.	The bursting of boilers or tubes, &c. of engines.	The failure of machinery, springs, &c. of engines.	The failure of tyres.
ENGLAND AND WALES													
Brecon and Merthyr Junction	–	–	–	–	–	–	–	–	–	–	–	–	2
Cambrian	–	–	–	–	–	–	–	–	–	–	–	–	–
Cheshire Lines	–	1	–	–	–	–	–	–	–	–	–	–	–
Festiniog	–	–	–	–	–	–	–	–	–	–	–	–	–
Furness	–	–	–	–	–	–	–	–	–	–	–	–	–
Great Eastern	2	–	–	–	9	–	1	1	12	7	–	1	10
Great Northern	1	2	2	–	–	–	–	2	–	–	–	–	3
Great Western	1	1	–	–	2	–	1	1	14	8	–	2	10
Hull, Barnsley, and West Riding Junction.	–	–	–	–	1	–	–	–	–	–	–	1	–
Isle of Wight	–	–	–	–	–	1	–	–	–	–	–	–	–
Lancashire and Yorkshire	5	4	4	–	–	–	–	1	12	1	–	–	1
Lancashire and Yorkshire and London and North-Western Joint.	–	–	–	–	1	–	–	1	–	–	–	–	–
Liverpool Overhead	–	–	–	–	–	–	–	1	–	–	–	–	–
London and North-Western	1	2	–	1	3	1	–	5	–	1	–	–	10
London and North-Western and Great Western.	–	1	–	–	1	–	–	–	–	–	–	–	–
London and South-Western	3	2	1	–	2	–	–	1	3	4	–	–	5
London, Brighton, and South Coast.	1	1	–	–	1	1	–	1	3	1	–	–	1
London, Chatham, and Dover	1	1	–	–	–	–	–	–	–	–	–	–	–
London, Tilbury, and Southend.	–	–	–	–	–	–	–	–	2	–	–	–	–
Manchester, Sheffield, and Lincolnshire.	–	–	1	–	–	–	–	1	1	–	–	–	1
Maryport and Carlisle	–	–	–	–	–	–	–	–	–	–	–	–	–
Mersey	–	–	–	–	1	–	–	–	–	–	–	–	–
Metropolitan	–	–	–	–	–	–	–	2	–	–	–	–	–
Midland	–	1	–	–	1	–	–	–	–	–	–	–	8
Midland and South-Western Junction.	1	–	–	–	–	–	–	–	–	–	–	–	–
Neath and Brecon	–	–	–	–	1	3	–	–	1	–	–	–	–
North-Eastern	2	1	1	–	2	–	–	1	27	3	1	–	4
North and South-Western Junction.	–	–	–	–	–	–	–	–	1	–	–	–	–
North London	–	–	–	–	–	–	–	–	–	–	–	–	–
North Staffordshire	–	–	–	–	–	–	–	–	–	–	–	–	2
Sheffield and Midland Joint	1	1	–	–	1	–	–	–	–	–	–	–	–
Somerset and Dorset	–	–	–	–	–	–	–	–	1	–	–	–	–
South Eastern	2	2	–	–	–	–	–	–	–	1	–	–	1

TABLE No. 4.

during the Nine Months ending 30th September 1893, distinguishing the different CLASSES of ACCIDENTS, the different the Servants of Railway Companies, KILLED or INJURED on each Railway by those Accidents.

The failure of wheels.	The failure of axles.	The failure of brake apparatus.	The failure of couplings.	The failure of ropes used in working inclines.	The failure of tunnels, bridges, viaducts, or culverts.	Broken rails.	The flooding of portions of permanent-way.	Slips in cuttings or embankments.	Fire in trains.	Fire at stations or involving injury to bridges or viaducts.	Other accidents.	Number of Passengers and others.		Number of Servants.		Total all Classes.	
												Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	9	–	1	–	10
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	11	–	–	–	–	–	–	–	–	–	–	–
–	3	–	–	–	–	3	1	–	–	–	–	–	13	–	1	–	14
–	2	–	–	–	–	13	–	–	–	–	–	–	16	–	3	–	19
–	20	–	3	–	1	14	–	2	–	4	–	–	15	–	8	–	23
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	3	–	–	7	–	–	–	–	–	–	83	–	5	–	88
–	–	–	–	–	–	–	–	–	–	–	–	2	50	1	–	3	50
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	26	–	–	–	–	23	–	–	1	–	–	–	57	1	3	1	60
–	–	–	–	–	–	5	–	–	–	–	–	–	1	–	1	–	2
–	1	–	3	–	–	16	–	1	1	–	–	–	10	–	3	–	13
–	3	–	4	–	–	14	–	–	–	–	–	–	3	–	1	–	4
–	2	–	–	–	–	14	–	–	–	–	–	–	4	–	1	–	5
–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	1	1
–	–	–	–	–	–	3	–	–	–	–	–	–	7	–	1	–	8
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	14	–	–	–	–	–	–	42	–	3	–	45
–	7	–	–	–	–	9	–	–	–	–	–	–	3	–	–	–	3
–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1
–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–
–	15	–	–	–	–	12	–	–	–	–	1	–	34	–	6	–	40
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	4	–	1	–	5
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	1	5	–	–	1	5

[Continued on next page.

TABLE No. 4.—Number of Accidents to Trains,

NAME OF COMPANY.	Collisions between passenger trains or parts of passenger trains.	Collisions between passenger trains and goods or mineral trains, engines, &c.	Collisions between goods trains or parts of goods trains.	Trains coming in contact with projections from other trains travelling on parallel lines.	Passenger trains or parts of passenger trains leaving the rails.	Goods trains or parts of goods trains, engines, &c. leaving the rails.	Trains or engines travelling in the wrong direction through points.	Trains running into stations or sidings at too high a speed.	Trains running over cattle or other obstructions on the line.	Trains running through gates at level-crossings.	The bursting of boilers or tubes, &c. of engines.	The failure of machinery, springs, &c. of engines.	The failure of tyres.
Taff Vale	–	–	–	–	1	–	–	–	–	–	–	–	–
West Lancashire	–	–	–	–	–	–	–	–	–	–	–	–	–
Private Owners	–	–	–	–	–	–	–	–	–	–	–	–	301
TOTAL, ENGLAND	21	20	9	1	27	6	2	18	77	26	1	4	359
SCOTLAND.													
Aberdeen Joint Station	–	–	–	–	1	–	–	–	–	–	–	–	–
Caledonian	–	–	–	–	1	–	1	1	20	–	–	–	11
City of Glasgow Union	–	–	1	–	–	–	–	–	–	–	–	–	–
Dundee and Arbroath	–	–	–	–	–	–	–	–	1	–	–	–	–
Glasgow and South-Western	2	1	1	–	1	–	–	1	1	–	–	–	–
Great North of Scotland	1	–	–	–	–	–	–	–	1	–	–	–	2
Highland	–	1	–	–	1	–	–	–	1	–	–	–	1
North British	1	1	–	–	4	1	1	–	7	–	–	–	6
Portpatrick and Wigtownshire	–	–	–	–	1	1	–	–	–	–	–	–	–
Private Owners	–	–	–	–	–	–	–	–	–	–	–	–	1
TOTAL, SCOTLAND	4	3	2	–	9	2	2	2	31	–	–	–	21
IRELAND.													
Belfast and Northern Counties	–	1	–	–	3	–	–	–	–	–	–	–	–
Bessbrook and Newry	–	–	–	–	2	2	–	–	–	–	–	–	–
Cavan, Leitrim, and Roscommon.	–	–	–	–	1	–	–	–	1	1	–	–	–
Clogher Valley	–	–	–	–	–	–	–	–	–	–	1	–	–
Cork, Blackrock and Passage	–	–	–	–	–	–	–	–	–	–	–	–	–
Dublin, Wicklow, and Wexford	–	–	–	–	–	–	–	–	–	–	–	–	–
Great Northern of Ireland	–	–	–	–	–	–	–	–	–	–	–	1	–
Great Southern and Western	–	–	–	–	1	–	–	–	–	–	–	–	–
Midland Great Western	–	–	–	–	–	–	–	–	–	–	–	–	1
Sligo, Leitrim, and Northern Counties.	–	–	–	–	–	–	–	–	–	–	–	–	–
Tralee and Dingle	–	–	–	–	1	–	–	–	–	–	–	–	–
Waterford and Central Ireland	–	–	–	–	–	–	–	–	1	–	–	–	–
Waterford and Limerick	–	–	–	–	–	–	–	–	5	–	–	–	–
TOTAL, IRELAND	–	1	–	–	8	2	–	–	7	1	1	1	1
TOTAL, UNITED KINGDOM	25	24	11	1	44	10	4	20	115	27	2	5	381

lling-Stock, Permanent-Way, &c.—*continued.*

The ailure of wheels.	The failure of axles.	The failure of brake apparatus.	The failure of couplings.	The failure of ropes used in working inclines.	The failure of tunnels, bridges, viaducts, or culverts.	Broken rails.	The flooding of portions of permanent-way.	Slips in cuttings or embankments.	Fire in trains.	Fire at stations or involving injury to bridges or viaducts.	Other accidents.	Number of Passengers and others.		Number of Servants.		Total all Classes.	
												Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
–	–	–	–	–	–	–	–	–	–	–	–	13	7	–	5	13	12
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	89	–	13	–	1	162	1	4	2	4	1	17	365	2	43	19	408
–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1
–	17	–	–	–	–	12	–	–	–	–	–	–	4	1	–	1	4
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1
–	–	–	–	–	–	–	–	–	1	–	1	–	14	–	2	–	16
–	1	–	1	–	1	–	–	–	–	–	–	–	6	–	2	–	8
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	2
–	15	–	–	–	1	14	–	–	–	–	–	–	5	1	6	1	11
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	5	–	–	–	–	–	–	–	–	–	–	–	–	–	..	–	–
–	38	–	1	–	2	26	–	–	1	–	1	–	31	2	12	2	43
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–
–	1	–	–	–	–	3	–	–	–	–	–	–	–	–	–	–	–
–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	14	3	–	3	14
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	6	–	1	–	–	5	–	–	–	–	–	–	14	3	1	3	15
1	133	–	15	–	3	193	1	4	3	4	2	17	410	7	56	24	466

TABLE No. 5.

NUMBER of SERVANTS of RAILWAY COMPANIES and CONTRACTORS reported, during the Nine Months ending 30 used exclusively upon RAILWAYS, distinguishing the Number which have occurred on each Railway or System

NAME OF COMPANY.	From accidents to trains, &c. See Table No. 4.		Whilst coupling or uncoupling vehicles.		By coming in contact whilst riding on vehicles during shunting with other vehicles, &c. standing on adjacent lines.		Whilst passing over, or standing upon, buffers during shunting.		When getting on or off, or falling off, engines, waggons, &c. during shunting.		Whilst braking, spragging, or chocking wheels.		Whilst attending to ground-points, marshalling trains, &c.		Whilst moving vehicles by capstans, turntables, props, &c. during shunting.		By other accident during shunting operation not includ in the preceding	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Inj
ENGLAND AND WALES.																		
Barry	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–
Brecon and Merthyr Junction	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Cambrian	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Cheshire Lines Committee	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	2	–
Furness	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–
Great Eastern	–	1	–	2	1	1	–	–	–	2	1	1	–	–	2	4	1	4
Great Northern	–	3	–	8	–	1	–	–	–	3	–	3	–	2	2	11	6	15
Great Northern and Great Eastern Joint.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Great Northern and London and North-Western.	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Great Western	–	8	–	22	–	2	–	–	1	27	–	15	–	4	–	18	5	34
Hull, Barnsley, and West Riding	–	–	–	1	–	–	–	–	–	1	–	1	–	–	–	1	–	1
Lancashire and Yorkshire	–	5	1	28	–	1	–	1	1	19	–	25	–	–	–	32	3	46
Lancashire and Yorkshire and London and North-Western.	1	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	1	–
Liverpool Overhead	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
London and North-Western	1	3	1	61	–	1	–	–	2	40	1	25	–	9	3	56	7	90
London and North-Western and Great Western Joint.	–	1	1	2	–	–	–	–	1	2	–	1	–	1	–	–	1	5
London and South-Western	–	3	–	4	–	–	–	–	–	3	–	–	–	–	–	3	3	15
London, Brighton, and South Coast	–	1	–	1	–	–	–	–	–	1	–	2	–	–	–	3	1	9
London, Chatham, and Dover	–	1	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–
London, Tilbury, and Southend	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Manchester, Sheffield, and Lincolnshire	–	1	–	7	1	–	–	–	–	1	–	4	–	–	–	5	4	5
Mersey	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–
Metropolitan	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Metropolitan and Metropolitan District.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Metropolitan District	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Midland	–	–	–	2	–	–	–	–	2	7	–	1	–	–	–	1	3	11
Midland and Great Western Joint	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	1	–	–
Midland and South-Western Junction	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–
North and South-Western Junction	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
North-Eastern	–	6	2	30	2	6	–	3	1	12	1	24	–	1	2	19	2	44
North London	–	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	1	5
North Staffordshire	–	–	–	1	–	1	–	–	–	–	1	–	–	–	–	–	1	2
Oldham, Ashton, and Guide Bridge Bridge Junction,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–
Rhondda and Swansea Bay	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

TABLE No. 5.

September 1893, as KILLED or INJURED in the UNITED KINGDOM by the TRAVELLING of TRAINS or the MOVEMENT of VEHICLES Railway, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury.

From falling off engines, &c. during the travelling of trains.		By coming in contact with over-bridges or erections on the sides of the line during the travelling of trains.		When getting on or off engines, vans, &c. during the travelling of trains.		Whilst attending to, or by the failure of, machinery, &c. of engines in steam.		Whilst working on the permanent-way, sidings, &c.		Whilst attending to gates at level-crossings.		Whilst walking, crossing, or standing on the line on duty.		From being caught between vehicles.		From falling or being caught between trains and platforms, walls, &c.		Whilst walking, &c. on the line on the way home or to work.		Miscellaneous.		TOTAL.	
Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	3
–	–	–	–	–	–	–	–	1	1	–	–	1	–	1	–	–	–	–	–	–	–	6	2
–	–	–	–	–	–	–	–	–	–	–	–	1	2	–	–	–	–	–	–	–	–	1	3
1	1	–	–	–	–	–	6	2	5	–	2	14	11	–	–	1	1	1	–	–	2	24	43
–	–	–	1	–	3	–	4	3	1	–	–	6	9	–	1	–	4	1	1	1	2	19	72
–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
1	–	–	2	–	12	–	44	5	5	–	–	9	19	2	4	1	5	4	1	–	20	28	242
–	–	–	–	–	1	–	1	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	9
–	3	–	5	–	8	–	57	1	4	–	–	4	13	–	6	–	3	1	–	–	20	11	276
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	2	3
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1
–	4	1	2	1	16	2	112	9	10	–	–	9	12	1	8	2	5	4	2	–	26	44	482
–	–	–	1	–	1	–	–	–	–	–	–	–	2	–	–	1	–	–	1	–	2	4	19
1	3	–	1	–	4	–	6	4	6	–	–	2	3	–	1	1	3	1	–	–	3	12	58
–	2	–	2	–	–	–	1	1	2	–	–	5	4	–	–	–	1	1	–	–	2	8	31
–	1	1	–	–	1	1	–	1	1	–	–	1	2	–	–	–	–	–	–	–	–	4	8
–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	1	1	–	–	–	–	3	1
–	3	–	–	–	–	–	2	2	–	–	–	4	1	–	1	–	–	1	–	–	–	12	30
–	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	3
–	–	–	–	–	–	–	1	–	2	–	–	1	–	–	–	–	–	–	1	–	1	1	8
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	1	–	–	–	1	3
–	–	–	–	2	7	1	1	7	2	–	–	8	8	4	3	–	–	2	–	–	5	29	48
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	4
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1
–	5	–	5	–	7	3	52	2	5	–	2	10	13	–	2	–	2	–	–	–	4	25	242
–	1	–	–	–	2	–	1	1	–	–	–	1	–	–	–	–	–	–	–	–	10	3	21
–	–	–	–	–	–	–	–	4	–	–	–	1	–	–	–	–	–	–	–	–	–	7	4
–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1

[*Continued on next page.*

TABLE No. 5.—Number of Servants report

NAME OF COMPANY.	From accidents to trains, &c. *See* Table No. 4.		Whilst coupling or uncoupling vehicles.		By coming in contact whilst riding on vehicles during shunting with other vehicles, &c. standing on adjacent lines.		Whilst passing over, or standing upon, buffers during shunting.		When getting on or off, or falling off, engines, waggons, &c. during shunting.		Whilst braking, spragging, or chocking wheels.		Whilst attending to ground-points, marshalling trains, &c.		Whilst moving vehicles by capstans, turntables, props, &c. during shunting.		By other accidents during shunting operations not included in the preceding	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Severn and Wye and Severn Bridge	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Sheffield and Midland Joint	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Somerset and Dorset	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	2
South-Eastern	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	2	1	3
Stalybridge Joint Station	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–
Taff Vale	–	5	–	–	–	–	–	–	–	2	–	–	1	–	–	–	1	1
West London Extension	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
West Riding and Grimsby	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TOTAL, ENGLAND AND WALES	2	43	6	177	4	14	–	6	8	123	4	105	1	18	10	158	46	294
SCOTLAND.																		
Caledonian	1	–	–	19	1	2	–	9	1	11	–	10	–	1	1	6	1	10
Caledonian and North British Joint	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–
Dundee and Arbroath	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Glasgow and Paisley Joint	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Glasgow and South-Western	–	2	–	2	–	–	–	2	–	2	–	1	–	–	–	–	–	2
Glasgow, Barrhead, and Kilmarnock	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Great North of Scotland	–	2	1	–	–	–	–	–	–	1	1	–	–	–	–	–	1	1
Highland	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
North British	1	6	–	11	–	2	–	–	1	6	–	5	–	2	2	5	–	14
Portpatrick and Girvan Joint	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TOTAL, SCOTLAND	2	12	1	34	1	4	–	11	2	20	1	17	–	3	4	11	2	34
IRELAND.																		
Belfast and Northern Counties	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bessbrook and Newry	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dublin, Wicklow, and Wexford	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dundalk, Newry, and Greenore	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Great Northern of Ireland	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–
Great Southern and Western	–	–	–	1	–	–	–	–	–	1	–	1	–	1	1	1	–	–
Midland Great Western	–	–	–	3	–	–	–	–	–	1	–	–	–	–	–	–	1	1
Tralee and Dingle	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Waterford and Limerick	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–
West Clare	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TOTAL, IRELAND	3	1	–	5	–	–	–	–	–	3	–	1	–	1	1	1	4	1
TOTAL, UNITED KINGDOM	7	56	7	216	5	18	–	17	10	146	5	123	1	22	15	170	52	329

Killed or Injured, &c.—*continued.*

From falling off engines, &c. during the travelling of trains.		By coming in contact with over-bridges or erections on the sides of the line during the travelling of trains.		When getting on or off engines, vans, &c. during the travelling of trains.		Whilst attending to, or by the failure of, machinery, &c. of engines in steam.		Whilst working on the permanent-way, sidings, &c.		Whilst attending to gates at level-crossings.		Whilst walking, crossing, or standing on the line on duty.		From being caught between vehicles.		From falling or being caught between trains and platforms, walls, &c.		Whilst walking, &c. on the line on the way home or to work.		Miscellaneous.		Total.	
Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	1
–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–	2	5
–	1	–	1	–	–	–	–	–	4	1	–	4	7	–	3	–	–	–	1	–	1	7	23
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	1	–	2	–	1	1	–	–	–	1	–	–	–	–	–	–	–	–	–	4	12
–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
3	27	2	22	3	67	7	291	45	49	1	4	84	110	8	30	8	28	18	8	1	98	261	1,672
–	3	–	3	–	7	–	6	4	5	–	–	14	5	–	1	1	2	1	–	–	–	25	106
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	3	–
–	–	–	–	–	–	–	–	1	–	–	–	2	–	–	–	–	–	–	–	–	–	3	2
–	2	–	3	–	–	–	2	1	1	–	–	1	1	–	2	–	1	1	–	–	1	3	24
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	4	5
–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	–	1	–	–	–	2	3
–	4	–	3	1	2	–	4	1	3	–	–	3	10	–	–	–	1	2	–	1	3	12	81
–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1
–	9	–	9	1	9	–	13	7	9	1	–	23	17	–	3	1	5	5	–	1	4	52	224
–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–	1	–	–	–	–	–	2	1
–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
–	–	–	–	–	1	–	–	–	–	1	–	1	–	–	1	–	–	–	–	–	–	5	2
1	1	–	–	–	–	–	–	–	1	–	–	1	–	–	–	–	–	1	1	–	1	4	9
–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	1	–	–	–	4	5
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1
1	1	–	1	–	1	–	–	1	2	1	–	5	–	–	2	1	–	2	1	–	1	19	22
4	37	2	32	4	77	7	304	53	60	3	4	112	127	8	35	10	33	25	9	2	103	332	1,918

TABLE No. 6.

TABLE showing the different OCCUPATIONS of SERVANTS of RAILWAY COMPANIES and CONTRACTORS who were KILLED and INJURED during the Nine Months ending 30th September 1893, and classifying their INJURIES as far as practicable.

CLASS OF SERVICE.	Fatal.	Amputations.			Fractures.		Dislocations.	Crushes.			Scalds, Burns.	Sprains, Cuts, or Bruises.	Severe.	Shaken.	Slight.	Unspecified Injury to				Miscellaneous.	Total Injured.
		Legs or Arms.	Feet or Hands.	Toes or Fingers.	Legs or Arms.	Collar-bones or Ribs.		Legs or Arms.	Feet or Hands.	Body.						Head.	Body.	Legs or Arms.	Feet or Hands.		
Brakesmen and Goods-guards	28	4	3	6	10	9	4	5	40	3	3	119	6	1	8	15	24	44	24	2	330
Capstanmen	2	–	–	–	4	–	–	1	6	3	–	5	4	–	–	3	1	7	11	–	45
Carmen	3	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	4	–	5
Carriage-cleaners	2	–	–	–	–	–	–	–	2	1	–	3	1	1	1	–	1	2	2	–	14
Carriage or waggon examiners	5	–	–	–	–	–	–	–	–	–	–	5	2	1	–	1	–	1	2	–	12
Checkers	–	–	–	1	1	1	–	–	–	2	–	2	–	–	–	–	1	2	1	1	12
Chockers, Chain-boys, and Slippers.	–	1	–	–	1	1	–	–	4	3	–	2	–	–	–	1	2	6	9	1	31
Clerks	5	–	–	–	1	–	–	–	–	–	–	4	1	1	–	1	–	–	–	–	8
Engine-cleaners	4	–	1	–	3	1	–	1	4	6	–	9	1	–	3	–	4	7	6	–	46
Engine-drivers	18	–	2	–	4	4	3	1	12	1	14	52	16	2	5	12	21	37	18	4	208
Firemen	7	1	3	1	6	4	1	3	25	3	19	71	14	2	12	26	15	31	33	5	275
Gatekeepers	2	1	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	1	–	–	4
Greasers	6	1	1	–	1	–	–	–	–	–	–	5	1	–	–	–	1	1	2	–	13
Guards, Passenger	3	–	–	–	1	2	–	–	2	–	–	16	3	2	5	3	4	5	3	1	47
Horse-drivers	2	–	1	–	2	1	–	1	6	–	–	6	–	–	–	1	–	3	7	–	28
Inspectors	2	1	–	–	–	1	–	–	–	–	–	2	2	–	–	3	3	1	1	–	14
Labourers	30	2	2	–	4	2	–	1	8	1	1	20	5	–	4	3	2	3	3	–	61
Lampmen	3	–	1	–	1	–	–	–	–	–	–	2	–	–	1	–	–	–	1	–	6
Loaders and Sheeters	1	–	–	–	–	1	–	1	–	–	–	1	–	–	–	–	–	2	–	–	5
Mechanics	12	–	–	–	1	1	–	1	1	–	–	12	2	2	1	4	1	1	3	–	30
Messengers	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	3
Number-takers	–	1	1	–	–	–	–	–	2	–	–	2	1	–	–	1	–	2	–	–	10
Permanent-way Men	102	2	4	1	6	4	–	–	6	3	–	27	8	4	3	4	4	8	2	2	88
Pointsmen	–	1	1	–	1	1	–	–	–	1	–	1	1	–	–	–	1	–	–	–	8
Policemen	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Porters	39	1	2	2	14	5	3	6	50	14	1	69	23	3	2	9	11	27	28	1	271
Shunters	22	1	2	–	4	4	2	4	41	4	–	71	10	2	5	6	18	27	30	3	234
Signal-fitters	–	–	–	1	–	–	–	–	1	–	–	–	1	–	–	–	–	1	–	–	4
Signalmen	6	–	–	–	–	–	–	–	1	–	–	8	2	–	–	1	4	–	1	–	17
Station-masters	1	1	–	–	–	–	–	–	–	–	1	2	1	–	1	2	1	2	–	–	11
Ticket-collectors	–	–	–	–	–	–	–	–	–	–	–	2	–	–	2	1	–	1	–	–	6
Watchmen	5	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	2
Yardsmen	2	1	–	–	–	–	–	–	1	–	–	5	1	–	–	1	2	1	1	–	13
Miscellaneous	8	1	1	–	–	–	–	–	7	1	–	10	1	4	1	4	–	8	7	–	45
Contractors' Servants	11	1	–	–	1	–	–	–	2	–	–	2	4	–	1	–	–	1	–	–	12
TOTAL	332	22	26	12	66	43	13	25	221	47	39	538	111	25	55	102	121	233	199	20	1,918

TABLE No. 7.

NUMBER of PERSONS reported, during the Nine Months ending 30th September 1893, as having been KILLED or INJURED whilst upon the Companies' Premises, by Accidents in which the Movement of Vehicles used exclusively upon Railways was not concerned, distinguishing between Passengers, Servants of Companies, and other Persons, and classifying, as far as practicable, the Nature and Causes of the Accidents occasioning the Death or Injury.

	England and Wales.		Scotland.		Ireland.		United Kingdom.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS :—								
Whilst ascending or descending steps at stations	3	103	—	—	—	—	3	103
By being struck by barrows, by falling over packages, &c. on station platforms	—	28	—	1	—	—	—	29
From falling off platforms	—	21	—	—	—	—	—	21
By other accidents	2	57	1	1	—	—	3	58
TOTAL	5	209	1	2	—	—	6	211
SERVANTS :—								
Whilst loading, unloading, or sheeting waggons	6	955	—	11	—	3	6	969
Whilst moving or carrying goods in warehouses, &c.	—	178	—	—	—	1	—	179
Whilst working at cranes or capstans	3	99	—	—	—	1	3	100
By the falling of waggon-doors, lamps, bales of goods, &c.	3	131	—	2	—	1	3	134
From falling off, or when getting on or off, stationary engines or vehicles	3	213	—	6	—	—	3	219
From falling off platforms, ladders, scaffolds, &c.	12	276	1	10	—	—	13	286
By stumbling whilst walking on the line or platforms	2	233	—	—	1	—	3	233
Whilst attending to stationary engines in sheds	1	172	—	—	—	—	1	172
By being trampled on or kicked by horses	1	38	—	—	—	—	1	38
Whilst working on the line or in sidings	8	490	1	2	—	—	9	492
Miscellaneous	3	295	—	3	1	3	4	301
TOTAL	42	3,080	2	34	2	9	46	3,123
PERSONS ON BUSINESS AT STATIONS AND OTHERS	15	127	—	6	—	1	15	134
SUMMARY :—								
Passengers	5	209	1	2	—	—	6	211
Servants	42	3,080	2	34	2	9	46	3,123
Persons on business at stations and others	15	127	—	6	—	1	15	134
TOTAL ALL CLASSES	62	3,416	3	42	2	10	67	3,468

Board of Trade,
20th December 1893.

COURTENAY BOYLE.

REPORTS TO THE BOARD OF TRADE BY INSPECTING OFFICERS OF THE RAILWAY DEPARTMENT UPON CERTAIN ACCIDENTS WHICH HAVE BEEN INQUIRED INTO.

	Page.
CHESHIRE LINES :	
Major Yorke's report on the collision that occurred on the 7th August, between a light engine and a passenger train at St. James' station, Liverpool	23
GLASGOW AND SOUTH WESTERN :	
Major Marindin's report on the collision that occurred on the 15th August, between a passenger train and a light engine at St. Enoch station, Glasgow	27
GREAT NORTHERN :	
Major Yorke's report on the collision that occurred on the 20th August, between a passenger train and some empty coaches at Luton station	30
GREAT NORTH OF SCOTLAND :	
Major Marindin's report on the collision that occurred on the 2nd August, between two portions of a mixed train at Tillynaught junction	34
GREAT WESTERN :	
Major-General Hutchinson's report on the accident to a passenger train and subsequent collision between it and another passenger train, which occurred on the 16th September in the Box Tunnel	37
HIGHLAND :	
Major Marindin's report on the accident that occurred on the 18th July to a passenger train, a portion of which left the rails at Dingwall station	45
Major-General Hutchinson's report on the collision that occurred on the 23rd October, between a mixed train and a goods train at Dalnaspidal station	49
LANCASHIRE AND YORKSHIRE :	
Major Yorke's report on the collision that occurred on the 26th August, between a light engine and a passenger train at the Exchange station, Liverpool	55
Major-General Hutchinson's report on the fatal accident that occurred on the 28th August at Rayner's Lane level crossing, near Ashton-under-Lyne	59
LONDON AND NORTH-WESTERN :	
Major Yorke's report on the collision that occurred on the 1st September, between a passenger train and the buffer-stops at Victoria station, Swansea	62
METROPOLITAN :	
Major Yorke's report on the collision that occurred on the 8th September, between a passenger train and the buffer-stops at the end of the Midland Railway Company's bay line at Moorgate Street station	66
MIDLAND :	
Major Marindin's report on the accident that occurred on the 1st August to a passenger train, a portion of which left the rails in Wickwar Tunnel	70
MIDLAND AND SOUTH-WESTERN JUNCTION :	
Major Yorke's report on the collision that occurred on the 23rd September, between two passenger trains at Ludgershall station	76
NORTH BRITISH :	
Major Marindin's report on the collision that occurred on the 7th July, between two passenger trains at Bridgeton Cross station	81
Major Marindin's report on the accident that occurred on the 10th July to a passenger train, a portion of which left the rails at Queen Street, low level, station, Glasgow	87
PRESTON AND WYRE JOINT :	
Major-General Hutchinson's report on the accident that occurred on the 1st July to a passenger train which left the rails near Poulton-le-Fylde junction station	89
TAFF VALE :	
Major Marindin's report on the accident that occurred on the 12th August to a passenger train which left the rails close to Llantrissant junction	98

For other Reports of Inquiries into Accidents which have occurred during the nine months, *see* [C.—7057.], [C.—7074.], and [C.—7194.]

CHESHIRE LINES.

Board of Trade, (Railway Department,)
Whitehall, London, S.W.,
1st September 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 12th August, the result of my enquiry into the collision that occurred on the 7th idem, at St. James' Station, Liverpool, on the Cheshire Lines.

On this occasion while an excursion train, which had left Liverpool Central Station at 9.38 a.m., was standing in St. James' Station, it was run into in rear by a light-engine, which had followed the train from the central station.

Nine passengers are reported to have complained of minor injuries, and the rear guard of the train, who was in his van at the time, had his head cut.

The train, which was a guaranteed excursion from Liverpool to Northenden, consisted of 14 vehicles, mostly third class, and there was a brake compartment in both the leading and rear carriages. It was timed to leave the central station at 9.38 a.m. immediately in front of the 9.38 ordinary train, and after stopping at St. James' Station at 9.43, it was to run direct to Northenden, where it was due to arrive at 10.35. It was provided with the automatic vacuum-brake.

The injury to the train is reported to have been slight, and confined to the rear third-class brake, in which several windows were broken. The light-engine, which belongs to the Manchester, Sheffield, and Lincolnshire Company, was a six-wheeled coupled goods engine, with a six-wheeled tender, and was fitted with the automatic vacuum-brake, working blocks on all the wheels of engine and tender. It received no injury whatever.

Description.

All the six platforms at the Liverpool Central Station are signalled for arrival and departure, and the excursion train in question started from what is known as No. 2 platform, the exit from which is controlled by two signals on the same post, viz., a starting signal above and a shunting signal below. The signal-post is fixed at the end of the platform, and alongside of it is the signal-cabin. There are three lines of rails between the central station and St. James' Station, viz., an up main, a down main, and a middle road, which last is used only for shunting purposes, and not for passenger traffic. About 45 yards in advance of the starting signal the lines enter a tunnel, which extends the whole way to St. James' Station, the platforms of which commence at the mouth of the tunnel, the total length of which is 981 yards. Both the up home and up distant-signals for St. James' Station are fixed in the tunnel, the former 40 yards from its south end, and the latter 156 yards from its north end. Outside Liverpool Central Station there is a through cross-over road between the up and down main lines, with slip points on to the middle road. The trailing-points of this cross-over road on the up main line are 77 yards inside the tunnel, and the distant-signal for St. James' Station already referred to is 79 yards in advance of these points.

Owing to the existence of the tunnel, the mouth of which is only 45 yards in advance of the signal-cabin at the central station, the signalman can see very little of the trains after they have passed his cabin, and all shunting operations are therefore carried out by a foreman shunter, under the instructions of a yard inspector, who acts in concert with the signalman. Disc signals are provided in the tunnel for controlling the shunting operations, and there is also a gong worked from the signal-cabin, for calling back any engine or train which may be standing in the tunnel.

The platforms at St. James' Station are only 112 yards long, and the station itself is situated between two tunnels, which are only 124 yards apart.

Absolute block working is in force between the central station and St. James'.

Evidence.

James Anelay, signalman, states: I have been in the Company's service 9½ years, and I have been signalman all the time. I have been stationed in Liverpool Central station-cabin about 2½ years. On the 7th August I came on duty at 6 a.m. for an eight hours spell. I came off duty on Sunday the 6th instant at

7 p.m. At 8.15 a.m. a special excursion train arrived at the Central station from Pilsley. After the passengers had alighted the train remained at No. 2 platform till 9.38, at which time it was to leave as an excursion train to Northenden. It left No. 2 platform at 9.38 punctually, "Line clear" having been received by me from St. James' station. After the train got clear of the platform the foreman shunter gave me instructions to allow the engine, which brought the train into the station, to follow it out on to the up line, and drop into No. 5 platform road. I lowered the shunt-signal for the engine to come out. The driver followed the train out as soon as I had lowered the signal and ran past my box into the tunnel. The foreman shunter told me that the engine was over the points, and I then set the road for No. 5 platform and pulled the disc-signal for setting back and gave the signal on the gong. But I found that the engine did not come back, and I then came to the conclusion that the driver had gone right away. As soon as I ascertained from the shunter that the engine had gone right away, I called the attention of the St. James' station signalman and told him, and he told me that the train was standing there and that the engine was behind it. The signalman acts under the instructions of the foreman shunter, so far as the shunting of engines is concerned. I have never known a case before where an engine has gone right away with the shunt-signal only. Each platform is signalled for arrival and departure, and there are in addition shunt-signals from each platform. The departure-signals for No. 2 platform are alongside my cabin. There are only two signals there, one main line departure and one shunt-signal. The shunt-signal reads for all three roads, viz., main down, middle road, and main up. The shunt-signal only permits a driver to go as far as the points on whichever road he is travelling, for the purpose of setting back. I had no idea on this occasion that the driver intended to go right away. There is a setting-back disc on the up main line, and also a setting-back signal on the middle road and down main line. The gong in the tunnel is used for setting back, and whenever the gong sounds, any engine standing in the tunnel is bound to set back. If after lowering the shunt-signal for an engine to draw out of the platform, I wished it to go right away, I should either give the driver a flag signal (white), or else send the shunter to him with verbal instructions.

Peter Lawrence, foreman-shunter, states: I have been in the Company's service 15 years, and I have been for ten years foreman shunter at the Central station. On the 7th August, after the 9.38 a.m. excursion train had left No. 2 platform, I told the signalman to let the light engine out of No. 2 platform on to the up line and back into No. 5 platform, so as to clear the road for the regular 9.38 a.m. train. No. 2 platform had to be cleared to allow another train to come in. I saw that the signalman set the road from No. 2 to the up main and lowered the shunt-signal, and the engine started away, and as the driver passed me I motioned to him to go right across to the up main. I shouted to him "Up line." The drivers always stop when they get over the top points, and I expected this man to do the same. As soon as the driver was over the points I called to the signalman to reverse the points and gong the driver back. For this purpose I called out "Over." I followed the engine up in order to wave the driver back by hand as this is the custom, but the driver went right away. I then came back to the signalman and told him the driver had gone right away. I have never known a driver go right away before with the shunt-signal off, unless he has also received a verbal instruction from the signalman to that effect. On the 7th August I came on duty at 5.30 a.m., I came off duty at 6 p.m. Sunday afternoon.

Benjamin Tressler, yard inspector, states: I have been in the Company's service 20 years, and I have been four years yard inspector. On the 7th August I was standing just opposite the signal-cabin when the 9.38 a.m. special train left No. 2 platform. I had previously arranged with the foreman-shunter that as soon as the special had left the light-engine was to run out on to the up line to clear the platform for an incoming train, and then to drop back into No. 5 so as to clear the up line for the 9.38 ordinary train. I was still standing near the cabin when the light engine passed me. I gave no instructions to the driver as he passed me. The foreman shunter was walking alongside of the engine, and I did not hear what passed between them. It is customary for the shunter to tell the driver what points he is to go over, and to give him a hand-signal to set back in addition to the fixed signal-gong worked by the signalman. I heard the gong ring, but the engine did not come back, and the shunter then told me that the engine had gone right away. I have never known an engine go right away before with only the shunt-signal off. But sometimes a driver may have been allowed to shunt into the tunnel, and has then received instructions from the signalman that he may go right away. The rule is that any engine standing in the tunnel is to set back as soon as the gong is sounded.

Joseph Mills, driver, states: I have been in the Manchester, Sheffield, and Lincolnshire Company's service for 12 years, for 2¼ of which I have been a driver. I am a spare driver. I booked off at 8.30 p.m. on Saturday the 5th August, and on the 6th August I came on duty at 6 p.m., and I was on duty all Sunday night. I travelled with a light-engine from Gorton to Liverpool, and I arrived at Liverpool about 8.45 p.m. I then turned my engine and got ready to take an empty train from Liverpool to Pilsley. I then left Pilsley for Liverpool with a special passenger train at 4.50 a.m., and I arrived at Liverpool Central station at 8.15 a.m. I remained at the bottom of No. 2 platform till 9.39. The coaches behind my engine left at 9.38, and after they had left the shunter came down the platform and called me out with a hand-signal, and as soon as I got under the bridge I saw that the shunt-signal was for me. When I got to the end of the platform foreman-shunter Lawrence said to me "Right across the road" and put his hand up in such a manner as to make me think I was to go right away to Brunswick. I accordingly left the regulator open and went away and did not look back. As I reached the up distant-signal for St. James' station I found it off. I then said to my mate I thought there was a mistake as the special train could not have cleared Brunswick in time for St. James to have his distant off for us. As soon as I got over the bank in the tunnel I shut off steam and applied my brake, and got down to walking speed so as to be ready to stop at St. James' home-signal. The tunnel was very full of smoke and I could not see the home-signal till I was right on it. I immediately put the brake hard on and almost at the same moment I ran into the train in front. I ran past the home-signal about half an engine length. I did not see the train in front until we touched it. My engine is No. 681, tender engine, six-wheeled coupled goods, with the automatic vacuum-brake working blocks on all the wheels of engine and tender. I was running tender first, and I was bound for shed at Brunswick. I was to sign on at 9 p.m. at night to work the excursion train back to Pilsley. I signed off on Tuesday 8th instant at 1 p.m. I am stationed at Gorton, but I know the road into Liverpool Central well, and I know the rules for working at that place. Sometimes when the shunt-signal has been lowered I have received from the shunter orders to go right away after getting into the tunnel. But I have never gone away without such instructions. On this occasion I understood the shunter to give me the instructions to go right away, as I was passing the cabin, and I thought that the

excursion train had cleared St. James between the time I left the top end of the platform and reached the cabin. I have never been instructed to go right away before by such words as the shunter used on this occasion, viz., "Right across the road" but I understood the hand-signal he gave me to mean that I was to go right away.

Harry Cain, fireman, states: I have been in the Manchester, Sheffield, and Lincolnshire Company's service nearly six years and I have been regular fireman about two years. This is the first time I have fired for driver Mills. My hours of duty on the 6th, 7th, and 8th August were the same as my driver's. I corroborate my driver's evidence. The occasion in question is the first time I have been into Liverpool Central station with a train. The shock of the collision was very slight, and neither I nor my mate were in any way hurt, nor was the engine in any way damaged. I had booked off duty on Saturday about 6 or 7 p.m. to the best of my recollection.

Frederick Weaver, passenger guard, states: I have been in the Company's service 11 years, and about 5½ years guard.—On August 7th I came on duty at 9.10 a.m. at Central station in order to work with the 9.38 special from here to Northenden. We left Central station at 9.38 and we stopped at St. James station. I was in the rear brake, and I had an assistant guard in the front brake. My train consisted of 14 vehicles. When we stopped at St. James station the engine was, I believe, right up to the starting-signal, and the vehicles at the tail of the train were in the tunnel. I did not get out of my van. I had been scarcely a minute there when I heard an engine or train approaching, and I thought it was on the middle road. Shortly afterwards the engine ran into my brake and knocked me down and cut my head. Immediately afterwards my train began to move ahead, and I got up and applied the vacuum-brake and stopped it. The damage to my van was slight, and consisted chiefly of broken windows. Five passengers went with me to the dispensary to have their wounds dressed. The vehicles at the rear portion of the train were fully loaded, but the front and centre portion were nearly empty.

Conclusion.

The cause of this collision is clearly explained by the foregoing evidence. The 9.38 a.m. guaranteed excursion train left No. 2 platform, Liverpool Central station, for Northenden at the proper time. As soon as it had passed the signal-cabin, the signalman placed the starting-signal at danger and lowered the shunting-signal, so as to allow the engine, which had been standing at the end of the platform behind the carriages of the excursion train for one hour 23 minutes, to get out of the station. It was desirable to do this, because No. 2 platform was required for an incoming train, and had the engine not been released from its position before the arrival of this down train it would have been imprisoned for a further period. As soon as the shunting signal was lowered, a shunter informed the driver of the fact, and the latter thereupon allowed his engine to draw out of the station past the signal-cabin into the tunnel. The intention of the signalman, who had received instructions from yard-inspector Tressler, was to clear No. 2 platform and to place the engine in No. 5 platform road until after the departure of the 9.38 a.m. ordinary train, when permission would have been given to driver Mills to take his engine away to the shed at Brunswick. With this view the signalman, before lowering No. 2 shunting-signal, had set the road from No. 2 platform to the up main line, and as soon as the engine had passed through the trailing points of the cross-over road on to the up main (which points are, as already explained, 77 yards inside the tunnel) the signalman reversed the points, set the road for No. 5 platform, and gave the usual disc and gong signals for the driver to set back as intended. As the engine was passing the signal-cabin, foreman-shunter Lawrence called out to the driver that he was to go right across to the up line, and at the same time gave a hand-signal, which according to Lawrence's statement, was merely intended to indicate to the driver that he was to draw down for shunting purposes, but which driver Mills asserts was of such a nature as to lead him to suppose that he was to go "right away" to Brunswick. Mills therefore gave his engine steam and without waiting for further instructions travelled forward to St. James' station "en route" for Brunswick locomotive shed. A short distance from the points of the cross-over road, he passed the up distant-signal for St. James' station, which he found off, and he then, according to his own account, realized that something was wrong, for he knew that the excursion train in front of him had not had sufficient time to clear the section beyond St. James', so as to allow the signalman at the latter place to lower his home and distant signals for a succeeding train. He therefore reduced his speed and ran slowly forward with the intention of stopping at the St. James home-signal. This signal is also in the tunnel and when as on this occasion the tunnel is full of smoke, it is difficult to discern. Driver Mills states that he did not see this signal till he was close up to it, that he immediately applied his brake with full power, and brought his engine to a standstill opposite the signal. But as he was running tender first, the latter overlapped the signal about half an engine's length. The excursion train was timed to stop at St. James' station, and pulled up at that place with the engine close to the starting-signal. This signal is 12 yards in advance of the south end of the platform, the latter being 112 yards long, making 124 yards in

all. The train, as already stated, was a long one, consisting of 14 vehicles besides engine and tender, and the total length of the train inclusive was 473 ft. 2½ in., or close upon 158 yards. The tail of the train therefore overlapped the north end of the platform 34 yards, or about three coach lengths, and as the tunnel extends up to the St. James' station, the last three coaches on the train were standing in the tunnel. The up home-signal at St. James is 40 yards inside the tunnel, so that the tail of the excursion train was only six yards inside the home-signal. The length of the light engine and tender is 47 ft. 3½ in., or nearly 16 yards, and as driver Mills acknowledges that he ran half on engine's length or eight yards past the home-signal, it is clear that his tender (his engine running tender in front) was bound to strike the train, the rear end of which was only six yards inside the signal.

The collision must undoubtedly be attributed to driver Mills' haste in assuming that a wave of the hand on the part of foreman-shunter Lawrence was intended as a right-away signal. Mills acknowledges that the lowering of No. 2 shunting-signal authorised him only to proceed into the tunnel for the purpose of shunting, and he acknowledges also that words such as those spoken by Lawrence have never on any previous occasion been taken by him to mean that he might go "right away;" but his excuse is, that the words on the day in question were accompanied by such a gesture as to lead him to understand that he was to proceed to Brunswick. There is no advanced starting-signal at the central station, for the good reason that such a signal, did it exist, would have to be fixed in the tunnel out of sight of the signalman. It appears from the evidence that a driver of a light-engine, who has been permitted to draw out of the station into the tunnel by the lowering of a shunting-signal, may sometimes receive verbal orders from the signalman (such orders being conveyed by one of the shunters), to go right-away, when "Line clear" for a preceding train has been received from St. James, after the engine has passed the shunting-signal. And it is possible, though there is no evidence to this effect, that a certain looseness of practice may have sprung up, and that drivers may not always wait for the actual verbal message to be delivered to them, but accept a mere gesture from the shunter as sufficient authority for them to proceed on their journey. Whether this is the case or not, a driver incurs a great responsibility if he goes forward without clear and definite orders to do so from the signalman, and driver Mills, who interpreted a mere wave of the hand as a right-away signal, must therefore be held responsible for the collision under consideration.

I am bound, however, to draw attention to the exceedingly long hours worked by this man. He came on duty at 6 p.m. on Sunday the 6th August, had no rest on Sunday night, and at the time of the collision, which occurred about 9.43 a.m. on the 7th August, he had been on duty 15 hours 43 minutes Of this period he had for 1 hour and 24 minutes (viz., from 8.15 to 9.39 a.m.) been waiting at the end of No. 2 platform, which delay to a man who had had no sleep during the previous night, must have been almost more wearisome than actual work. The rules and regulations enjoin vigilance and caution upon drivers at all times, but rules will not make a sleepy and a weary man vigilant. While therefore I am compelled to hold driver Mills responsible for the collision, I am not disposed to regard his carelessness on this occasion with severity. The hours of work of fireman Cain were the same as those of the driver, and are open to the same remarks. But the fireman cannot be held in any way responsible for the mishap.

None of the other servants of the Company appear to be in fault. Absolute block-working is in force between the two stations, and the signalman was working according to the rules; and foreman-shunter Lawrence, whose hand-signal was misinterpreted by the driver, cannot fairly be held responsible for the mistake.

The platforms at St. James' Station are clearly of insufficient length for heavy excursion trains, but it does not appear to be possible to lengthen them, situated as they are between two tunnels. The signal lights in the tunnel, between the Central Station and St. James, do not appear to give a very good light, and when the tunnel is full of smoke it must be difficult for drivers to see them. It would be an advantage if more powerful lamps could be substituted for those now in use.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

H. A. Yorke,
Major, R.E.

Printed copies of the above Report were sent to the Cheshire Lines Committee and the Manchester, Sheffield, and Lincolnshire Railway Company on the 20th September.

GLASGOW AND SOUTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
31st August 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 21st instant, the result of my enquiry into the circumstances attending a collision which occurred on the 15th instant at St. Enoch Station, Glasgow, on the Glasgow and South-Western Railway.

In this case, as the 8.45 a.m. down train from Ardrossan to Glasgow, (consisting of engine and tender, and six bogie carriages, equal to nine vehicles, all fitted with the automatic vacuum-brake) was running into St. Enoch Station at 9.42½ a.m., the engine came into collision with light-engine No. 204, which was standing on No 1 platform line, foul of the crossing through which the Ardrossan train had to run to get on to No. 2 platform line.

The light-engine was driven back for a short distance, but no vehicle left the rails. No passenger was injured but the driver of the light-engine received a slight cut on the face which necessitated his being off duty for one day.

The two engines were slightly damaged (*see* Appendix).

Description.

At St. Enoch Station, which lies due east and west, there are six platform lines, all signalled for arrival and departure, No. 1 line being on the south, or proper down side.

The line approaching the station from the south curves sharply to the left after crossing the River Clyde, but is straight inside the station.

The signal-cabin is on the north side of the railway, about 30 yards east of the outer end of the platform, and there is a bridge carrying the directing-signals for the different platform lines about 50 yards west of the cabin.

The line is level from the up distant-signal to near the signal-cabin.

Among other connections there is a cross-over road between No. 1 and No. 2 platform lines, with facing-points to outgoing trains on the former line, used by trains starting from No. 1 line, and known as No. 1 cross-over road; and another further east, with facing-points on the down main line into the station, used by trains running to No. 2 platform line, and known as No. 2 cross-over road. These cross-over roads are so situated that an engine standing on No. 1 line, or the down main line, near the signal-cabin, clear of the one will be foul of the other.

The point of collision was at the fouling point of No. 2 cross-over road and the main line, and it was about 38 yards distant from the signal-cabin, on the opposite side of the line, and 100 yards inside the down home-signal.

Owing to the curve, the view of an engine standing at this point, from an engine approaching on the down main line is very short.

Evidence.

David Brydon states: I have been seven years in the service, and a signalman for about six years. I have been working for 18 months in St. Enoch cabin. There are 109 working levers in the cabin, and two block instruments. On the 15th instant I came on duty at 7 a.m. for eight hours, having left duty at 3 p.m. on the previous day. At 9.19 a.m. the 8.10 a.m. down train from Fairlee Pier, due at 9.15, arrived on No. 1 platform line. At 9.24 a.m. the 8.55 a.m. down train from Milliken Park, due at 9.21, arrived, and ran into No. 1 platform line behind the Fairlee Pier train. The 9 a.m. train from Govan arrived at 9.23 a.m., and went into No. 5 platform At 9.30 a.m. one of the pilot engines, which had taken an empty train to Bellahouston, returned, and I ran it into No. 1 platform line behind the Fairlee Pier train, the Milliken Park empty train having already been taken away. The engine stopped near the signal-bridge. In order to clear No. 1 crossing for the empty Fairlee Pier train to come out, I at once signalled the light-engine to come back along No. 1 platform line, and it stopped just clear of No. 1 crossing. In this position it was foul of No. 2 crossing. There is no place at that part of the line where an engine can stand clear of all crossings. The engine came to a stand at about 9.31. There were then three down trains which arrived at 9.32, 9.39, and 9.40. These trains ran into Nos. 3 and 5 platform lines, and did not come near No. 2 crossing. At 9.39 I received from Clyde junction cabin the "Be ready" for the 8.45 a.m. down train from Ardrossan. I accepted the train at 9.40, and got it "On line" at the same time. The arrival is booked as 9.40½. At 9.40 I made the road and lowered the signals for it to run into No. 2 platform. No. 12 lever works the points, No. 13 and 11 locking bar levers, No. 8 the leading-signal, No. 6 the home-signal, and No. 4 the distant-signal, and all these levers were pulled by me.

I did not forget that the engine was standing on No. 1 line, but I forgot that it was standing foul of No. 2 crossing, through which the Ardrossan train had to run. I should have drawn the engine forward after the Fairlee Pier train had gone out, so as to clear No 2 crossing. The first thing which called my attention to anything being wrong was a signal from the platform given by foreman John McDonald. I at once ran to the window to see what he was signalling about, and by that time the Ardossan train was within two engine lengths of the light-engine, which was standing, and had not commenced to move back. Steam had been shut off on the engine of the train I cannot say when the brakes were applied on this engine. I should think the speed of the train was about eight or nine miles an hour, which is about the usual speed. Just about the time that the collision occurred, steam was applied on the pilot-engine. Neither engine left the rails. The engine of the train stopped near the signal-bridge. I intended to make use of the pilot-engine to take away the first empty train. I put it on No. 1 line as being the only suitable place at the time. There are two men on duty in St. Enoch's cabin, and a booking boy. I was the assistant on that day, but I was the man who dealt with the engine. I did not look out at the line before lowering the signals, because I had set the points, at the time the Renfrew train was passing the cabin into No. 5 line. I am not sure who gave "Line clear" for this train, whether it was I or signalman Lowden. It was clear weather at the time.

William Lowden states: I have been 8½ years in the service as a signalman, and working in St. Enoch Station cabin for over six months. On the 15th instant I came on duty at 6 a.m. for eight hours. I had left duty the previous day at 2 p.m. I was in charge of the cabin on that day. Sometimes I am in charge and sometimes assistant. It all depends on the shift. I have heard signalman Brydon's evidence and it is correct. There is no rule for the division of the work in the cabin, but usually one man takes one end of the frame, and the other takes the other, assisting each other as far as possible. I heard Brydon tell the driver of the pilot engine to stand clear of No. 1 crossing when he brought the engine back after its arrival, and then I forgot all about it. I knew that if it was clear of No. 1 it must be foul of No. 2 crossing. I knew what signals were lowered for the Ardrossan train to come in, and I even assisted to make the road by putting back No. 29 lever. I think I am to a certain extent responsible for the collision as well as Brydon. It is our usual custom to look out to see if the lines are clear before lowering signals, but there was a lot of work going on at the time. There were five trains starting from the station between 9.30 and 9.42. I heard the engine of the train whistling just as the collision occurred.

James Glendinning states: I have been nearly 30 years in the service and a driver for over 13 years. On the 15th instant I came on duty at 5 a.m. to work till 2 p.m. I had left duty the day before at 2 p.m. My engine, No. 204, is a six-wheeled engine with leading and driving wheels coupled, and with a six-wheeled tender. I took an empty train to Bellahouston at about 8 a.m., and came back with it to Southside, and then came light to St. Enoch. I ran into No. 1 platform line, and came to a stand near the signal bridge, behind an empty train. I was running tender in front. The signalman called me back and told me to stand clear of No. 1 crossing, which I did. The empty train was then drawn out. I remained standing where I had been placed for about seven minutes I should think. I was watching the signal-cabin, in case a signal was given for me to move. I was not looking at the signals at all. On turning round to look towards Clyde junction I saw the engine of a down train approaching. It was then past the home-signal. I attempted to clear the crossing by applying steam, as I was standing at the time in back gear, having reversed after I had come to a stand. I was just on the move when the collision occurred. I think the speed of the Ardrossan train had been checked a little by the use of the brake. My engine was driven back, and I stopped it as soon as we were clear of the crossing. The framing on the left side of my engine was stripped off. I got a small scratch on the face, and have been one day off duty. My fireman was not hurt.

David Brydon states: I have been about 2½ years in the service as cleaner, and act as fireman when required. I came on duty at 6 a.m. on the 15th instant to work as fireman with James Glendinning. I had worked with him the day before. I have heard his evidence and it is correct. I was also looking for a signal from the signal-cabin while we were standing. Our whistle was not sounded while we were standing.

John Arnott, states: I have been 39 years in the service, and close upon 30 years a driver. On the 15th instant I came on duty at Ardrossan at about 7 a.m. to work till about 6.30 p.m. I had been on the same duty the day before. My engine, No. 68, is an eight-wheeled engine with a leading bogie, and driving and trailing wheels coupled, and a six-wheeled tender. I was driver of the 8.45 a.m. train from Ardrossan to St. Enoch. We did not leave that morning until 8.54 a.m. the steamer having been late in arrival. I had a train of six bogie-carriages. The vacuum-brake was in operation all through the train, with brake-blocks on all the wheels except the engine bogie-wheels. We were due at St. Enoch at 9.25. I lost a little time by signals, owing to a Largs train being in front of us. The Clyde junction distant-signal was at danger until I was close on it, but ahead of this all the signals were clear for me to run into No. 2 line at St. Enoch. I had no steam on after passing Gorbals junction, and I had used the brake to check speed at Clyde junction distant-signal after which it was released. I think my speed when passing the St. Enoch home-signal was about 10 miles an hour. A short distance past the signal I saw through the glass the funnel of an engine on the down line. I was on the right side of the foot-plate, and I stepped to the left side to see where the engine was standing, and then I saw it was foul of the crossing to No. 2 line. I think that I was then not above 20 or 30 yards away from it. As soon as I saw where the engine was standing I touched the whistle and applied the brake, but had not reduced speed very much before I struck the engine. I did not notice whether this engine was on the move or not. I brought my train to a stand in about 40 yards, before reaching the signal-bridge. It was a clear morning at that time. Neither I nor my mate were hurt, and no vehicle left the rails.

Peter Kean states: I have been about 17 years in the service, and a passenger guard for one year. I was goods guard and spare guard for nearly 16 years. On the 15th instant I came on duty at 8 a.m. to work till 9.36 p.m., with an interval off duty from 11.30 a.m. to 4 p.m. I was guard of the 8.45 a.m. down train from Ardrossan, which was made up as follows: Engine and tender, two bogie third-class, two bogie first-class, one bogie third-class, and one bogie third-class brake carriages, fitted throughout with the automatic vacuum-brake. I was riding in the rear vehicle. We were eight minutes late on starting. We left Paisley at 9.29, 16 minutes late, and were due at St. Enoch at 9.25 We approached at the usual speed. I saw the distant-signal for St. Enoch was off. I was working the hand-brake when inspector Maxey, who was riding with me and was looking out of the window, called out something about a collision and I went to put on the continuous brake, which was applied just before I got to the valve. We had been running with about 19 inches

of vacuum. Immediately afterwards I felt a very slight shock from the collision, our speed at the time not being more than 10 miles an hour. It was a fairly full train. No passengers were injured, and no vehicle left the rails.

Conclusion.

This slight collision was due to want of care on the part of the signalmen in St. Enoch Station cabin, signalman David Brydon, who on that day was acting as assistant signalman, being the one more to blame, although signalman William Lowden was, and admits that he was, to some extent responsible for what occurred.

It appears that the light-engine No. 204, engaged in pulling out empty trains from the platform lines at St. Enoch, ran into No. 1 line at about 9.30 a.m., and came to a stand behind a train from Fairlee Pier, which had arrived at 9.24 a.m.; that in order to clear No. 1 cross-over road for this empty train to go out, the assistant signalman called the light-engine back towards the cabin, telling the driver to stand clear of No. 1 crossing; and that the engine came to a stand clear of this crossing but foul of No. 2 crossing, and remained there for about 11 minutes, until it was run into by the Ardrossan train, which was entering the station at 9.42½ a.m., with the signals off for it to run through No. 2 cross-over road into No. 2 platform line.

Neither driver was in fault, for the driver of the Ardrossan train had but a very short view of the light-engine, and was prompt in applying his automatic-brake when he became aware of its position foul of No. 2 crossing, and the driver of the light-engine may be excused for not seeing the approaching train, or the signal lowered for it, for he was watching the signal-cabin for a signal to move, and the signals were lowered only a very short time before the collision occurred.

There was a good deal of work going on at the time in the signal-cabin, but that is not a sufficient excuse for signalman Brydon forgetting all about the light-engine, which was standing at the place where he had ordered it to stop, in full view of, and within a very short distance of his cabin. Neither signalman seems to have looked out on the line before accepting, and lowering the signals for, the Ardrossan train. Signalman Lowden had at the time been on duty for 3¾ hours, and assistant signalman Brydon for 2¾ hours.

It is not a safe way of working to stand light-engines on a piece of main line at a busy station, where they have to be kept moving backwards and forwards to clear first one cross-over road and then another, and it is satisfactory to learn that, since this collision occurred, the Company has given orders that engines waiting to be attached to empty trains at St. Enoch are to be placed clear of the main line, until they are required.

I have, &c.,
(Signed) F. A. Marindin,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Damage to Engines.

Engine No. 204 (7 30 a.m. pilot.)—Buffer-beam and one buffer broken, front gangway-plate damaged, gangway on left side damaged, one sand box and pipe broken.

Engine No. 68 (Arran express.)—Buffer-beam bent and one buffer broken, engine-frame (left side) bent, left coupling-rod bent, engine bogie centre broken, leading bogie-axle bent, cab-splasher and gangway on left side slightly damaged.

Printed copies of the above Report were sent to the Company on the 21st September.

GREAT NORTHERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
11th September 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the order of the 30th August, the result of my inquiry into the collision that occurred on the 20th idem at Luton station on the Great Northern Railway. On this occasion an excursion train which had left King's Cross at 12.10 a.m. on the morning stated came into collision at 1.16 a.m. with four empty coaches, which had run down from the new platform-siding at Luton, and had thus fouled the main line at the east end of the station.

Ten passengers are reported to have complained of shock and minor injuries.

The train consisted of a four-wheel-coupled tank engine and five vehicles, including the guard's van, and was fitted with the automatic vacuum brake throughout. The engine had its leading buffer-beam broken, and the vacuum brake-pipe crushed, besides other damage, the details of which are given in the appendix. The coaches forming the train were uninjured.

The four empty passenger coaches consisted of one four-wheeled, one eight-wheeled, and two six-wheeled vehicles, and there was a brake compartment at each end. Two of these vehicles had the ends smashed in and under-carriages damaged.

Description.

The Great Northern station at Luton is situated on the single line branch from Hatfield to Luton. There is a passing loop at Luton station with up and down platforms, and at the back (or south side) of the up platform an additional up and down platform line or siding has recently been formed for passenger traffic, but though it is properly signalled and interlocked for arrival and departure in each direction, it has not yet been brought into use as a passenger line.

The gradients on this loop-siding are as follows:—From the loop points at the west end the siding rises towards the station at an incline of 1 in 461 for about 100 yards, it is then level for 33 yards, it then rises at 1 in 1,053 for 166 yards, it then falls at 1 in 428 for 100 yards towards the east end of the station, after which it is level for 66 yards up to the east loop points.

The signalling and interlocking arrangements appear to be entirely satisfactory, and as no question concerning them arose during the course of my inquiry, it is not necessary to describe them.

Outside the platform line already described, there is a goods siding, and there is a through cross-over road at the west end of the station from this goods siding to the down main loop line, which forms also by means of slip points a cross-over road between the platform and down main lines. To the westward of this cross-over road there is also a connection which gives access from the platform line to the engine shed.

On the evening of the 19th August there were standing on the platform line 19 goods waggons and four passenger vehicles. These practically filled the loop. The goods waggons were at the western end, while the coaches behind them stood upon the incline of 1 in 428, which falls towards the eastern end of the loop.

Evidence.

George Watson, driver, states: I was driver of No. 125 engine, and worked No. 309 down special passenger train, leaving Hatfield at 12.52 a.m. on Sunday morning last the 20th instant. The train consisted of five vehicles, fitted with the automatic-brake throughout, viz., third-class brake next the engine, third-class carriage, composite carriage, third-class carriage, and guard's van at the rear. All went well until reaching Luton east box. The distant and home-signals were off (showing all right) for the train to run into the station. I was passing the east box at a speed of about 8 to 10 miles an hour when my engine came violently into collision with some empty carriages standing foul of the running road at the points leading into the down platform road. It was very dark at the time, and as there was no lamp on the carriages obstructing the line, I had no warning whatever until my engine struck the carriages. I was running with steam off, and had the automatic-brake partly on preparing to stop at the platform. The collision caused the automatic pipe in front of my engine to be broken, so that the automatic brake went on almost momentarily throughout the train which caused the train to be brought to a very sudden stop. I am of opinion that the empty carriages obstructing the line were at a stand, and with all brakes off because immediately

the engine struck the carriages they were driven back clear of the running line leading into the down platform road. My train did not run more than two or three yards after coming into collision with the empty carriages. The empty carriages run into consisted of a four coach branch train, with a carriage brake at either end. The collision was rather severe owing to the sudden stoppage caused by the breakage of the automatic-pipe in front of my engine. I have been in the Company's service 30 years, 22 years as passed driver. On 19th August I came on duty at 4.12 p.m., and I was due to reach Hatfield at the end of my work at 3.18 a.m. on 20th August. My engine was a four-wheel coupled tank-engine, and I was running chimney in front. The engine and train were fitted with the automatic vacuum-brake, which was in working order. I was bruised on the knee by the collision. I subsequently drew up the train to the platform, and worked the train on to Dunstable, using the hand-brake.

William Avery Gough, foreman porter, states: I was on duty at Luton, and in charge of the station on Saturday night the 19th instant. No. 29 up passenger train was strengthened from Dunstable for the purpose of conveying volunteers from Dunstable to Luton. This train arrived at Luton at 7.58 p.m., and consisted of eight vehicles, of which four were detached and placed in No. 1 platform road, with a carriage-brake at either end. There were 19 waggons already in the siding. The carriages were close up to the waggons when I left them. This was done under my supervision. I detached the engine from the coaches when in the siding, and I put the automatic-pipe on the plug at the east end of the composite carriage-brake. I then got into the guards compartment of the carriage brake next the engine and put the hand-brake hard on and placed the strap over the handle of the brake, so as to prevent the brake from running off. This was done at 8.10 p.m., and the carriages were left standing with the front carriage-brake between the slope on the platform and the water crane, a distance of from 40 to 50 yards inside the points, and clear of the running line. This siding, from the east end, was not used again throughout the night. An engine and brake were turned in at the west end of the siding, to enable the engine of No. 38 up goods train to get to the shed at 12.30 midnight, but I am confident the 19 waggons and four carriages, already standing in this siding, were not pushed down by the engine and brake in question. I believe this siding (or new platform road) is capable of holding 30 to 33 waggons clear of the points at either end. I was careful not to allow the engine and brake to go back on to the waggons, in fact the engine did not clear the lock-bar when in the siding, and there was a space of from 28 to 30 yards between the points and the waggons to hold this engine and brake without touching the waggons. I saw a space of about two waggon lengths between the brake-van on the engine and the waggons already in siding. No. 38 up goods arrived at 12.5 midnight, and so far as I know both driver Lawrence and fireman Hart were on their engine during the whole of the shunting operations, and also at the time the engine and brake were turned in at the west end of No. 1 siding, for the purpose of the engine going to the shed. If driver Lawrence left his engine while going from the east to the west end of the yard it was unknown to me. I had previously told driver Lawrence there was no more shunting to be done, and after taking the passenger brake already attached to the engine to the west end of the yard, the engine could go to the shed. I had no occasion to go to the east end of the yard between 12.30 and the time of the accident which happened at 1.23 a.m. The empty coach train was all safe at 12.30 a.m. I left the automatic-brake and one of the hand-brakes tight on. I cannot account for these carriages running out foul of the main line. I am confident the carriages were not pushed foul by the engine and brake that entered the siding at the west end of the yard. I examined the hand-brake in question immediately after the collision had taken place and found it off. I have been in the Company's service since August 1885, and foreman porter at Luton four months, and before that I was for two years shunter at the same place. On August 19th I came on duty at 7 p.m.

John Davis, assistant shunter, states: I have been in the Company's service nearly 22 years, and I have been at Luton 17 years. I came on duty at 8.30 p.m. on Saturday, 19th August. I was on night duty at Luton on Saturday the 19th instant assisting foreman Gough. It is my duty to sweep out and clean three branch trains between times during the night. I can remember sweeping out the four coach empty train standing at the east end of No. 1 up siding at about 8.45 p.m. I can remember having swept out both brakes as well as the compartments, but I am confident I did not interfere with the hand-brake in any way, neither did I notice whether the hand-brake in the guard's compartment was off or on. I had no dealings with any shunting that was going on in No. 1 up siding during the night.

William Lawrence, driver, states: I worked No. 38 up goods train from Dunstable, arriving at Luton at 12.5 midnight on Saturday the 19th instant, and after having finished shunting operations foreman Gough told me there was nothing further to be done, and the engine was sent to the shed at 12.25 a.m. There was a passenger-brake attached to the engine at the time. The engine accordingly passed through the down main road from the east to the west end of the yard, and while doing so, I got off the engine opposite the points in northern platform line leading to the shed, and left fireman Hart to take the engine to the shed. I stood in the same place while the engine was being taken to shed by my fireman. It was a dark night, but I was near enough to see whether the engine touched the waggons or not. I saw the engine and van cross over at the west box into No. 1 up siding for the purpose of going into the shed. I am aware No. 1 siding was very full of waggons, but I am under the impression that the engine did not touch these waggons or I should have heard it while standing on the platform line. I got off my engine for the purpose of going into the porters' room to make out my bills for the day. I am aware it is contrary to instructions to leave my engine, but I sometimes do so and leave the engine in charge of the fireman to be taken into the shed. I have been in the Company's service nearly 20 years and for seven years I have been driver. On the 19th August I came on duty at 4.15 p.m. and I booked off at 12.25 a.m. on the 20th. My engine is No. 247 four-wheel coupled tank engine.

W. Hart, fireman, states: I have been in the Company's service about nine years, and I have been three years fireman. My hours of duty on the 19th August were the same as my driver's. I remember driver Lawrence getting off the engine while passing through the down platform road at Luton when going to the shed at 12.30 midnight on Saturday the 19th instant. I moved the engine very carefully, as I always do, and when turned into No. 1 up siding, which was full with waggons at the west box, I did not go clear of the lock-bar. There was not room between the waggons and points on No. 1 platform road for my engine and brake to clear the lock-bar. I was being signalled back into the siding by foreman Gough. There was a break-van attached to the engine, and this van remained on the engine all night for the next day's use. I am confident the brake-van attached to the engine did not touch the waggons standing in the siding. There were only 80 lbs. of steam in the engine at the time. I do not believe the engine was capable of moving the number

of waggons and carriages which were standing in the siding at the time.

Harry Taylor, signalman, Luton west box, states: I remember turning the Luton engine with break-van attached into No. 1 siding at 12.30 midnight on Saturday the 19th instant, in order that the engine could go to the shed. I did not notice whether the driver was on the engine or not. I heard the fireman call out "Shed." I put the points back immediately the engine got clear into the siding, but I was unable to get the lock-bar over, owing to the engine standing on it. I accounted for this by reason of the siding being full of waggons, and therefore gave a hand-signal for the engine to go to the shed. I have been in the Company's service 24 years, and I have been 15 years signalman at Luton. I came on duty at 6 p.m. on 19th August, and I should have booked off on Sunday morning at 2.45 a.m, had not I been detained in consequence of the accident.

Frank Long, signalman, Luton east box, states: I was on duty at Luton east on the night of the 19th instant. No. 29 up passenger train arrived at 7.58 while No. 33 down passenger train arrived at 8.6. Foreman Gough then shunted four empty carriages off the up train into No. 1 up siding (or local platform line) at 8.10 p.m., and the up train left at 8.15 p.m. I noticed the four coaches in question represented a branch train with a carriage brake at either end. I noticed Gough, after detaching the engine, get into the front carriage-brake, but for what purpose I do not know. The siding in which these carriages were standing was not used again during the night. No. 38 up goods arrived at 12.5 midnight, and did its work in No. 2 siding, and the engine crossed over for the purpose of going to the shed at 12.24 a.m., so that the carriages in question must have been safe at that time, or this engine could not have gone in and out of No. 2 siding which fouls the east end of No. 1 siding where the carriages in question were standing There was nothing more to be done until dealing with No. 309 down special passenger train, the "Be ready" signal for which I received at 1.12, "Train on line" from Luton Hoo at 1.18, passed at 1.23. I noticed immediately the engine of the special passed my box that something serious had happened. I at first thought the engine had struck the points in some way, and that the train was off the road, but I soon discovered that the engine had come into violent collision with a four-coach empty train which had by some means run down foul of the points leading into the down platform road. These coaches must have been standing within about eight yards of my box, but I neither saw nor heard anything of the coaches running foul of the main line. It was very dark at the time, and there was no lamp on the carriages. My down signals were all showing "All right" for the train to run into the station. I have been in the Company's service 17 years, and I have been 15 years' signalman at Luton. I came on duty at 6 p.m. on the 19th August for 12 hours spell.

Conclusion.

There is no direct evidence as to the cause of this collision, but a reasonable explanation of the occurrence can, I think, be arrived at from a consideration of the facts. The new platform line at Luton having been constructed as a passenger line is not provided with safety-points at its junction with the main line; but as it is not at present required for passenger traffic it is used for the accommodation of goods waggons and empty coaches, and it may therefore be regarded for the time being as an untrapped goods siding.

On the night of the 19th August there were 19 goods waggons standing in this siding. At 7.58 p.m. a passenger train arrived at Luton from Dunstable, to which four extra vehicles had been attached at Dunstable for the convenience of some volunteers who were returning to Luton. These extra vehicles, being no longer required, were detached at Luton, and were placed by the orders of foreman porter Gough in the platform siding immediately behind and, according to his statement, close against the 19 goods waggons already there. These four coaches were at the east end of the siding, and stood upon that portion of the line which falls at an inclination of 1 in 428 towards the eastern junction of the siding with the main line. Porter Gough is quite sure that after placing these coaches in the position described he screwed down the hand-brake in one of the brake-compartments, and that he secured the wheel that actuates the hand-brake by means of the strap which is provided for the purpose. Doubtless when these coaches were first placed in the siding, and the engine was detached from them, the automatic brake was brought into action on each one of them, but in the course of a few hours this would leak off, and Gough would be right to screw down the hand-brake.

At 12.5 a.m. on the morning of the 20th a goods train arrived at Luton, the engine of which was to proceed no further. The engine, after being detached from the goods train, performed a few shunting operations at the east end of the station, and then picked up a brake-van and proceeded to the engine shed. In order to reach the engine shed it ran along the down main line as far as the points of the cross-over road already mentioned, and then set back through that cross-over on to the platform siding, and then went forward again through two sets of facing-points into the engine shed. The 19 goods waggons were standing on the siding close up to the points of the cross-over road, and there was, as stated by fireman Hart, barely room for the engine and brake-van between the points and the waggons. It seems, therefore, extremely probable that the engine and brake-van in setting back through the cross-over road on to the siding came into contact with the waggons and gave them a slight impulse. This would be communicated to the passenger coaches which were behind

the waggons, and the impetus thus given to the coaches might, taking the gradient on which they were standing into consideration, be sufficient to cause them to travel a few yards to the eastward until they reached the level portion of the siding, in which position they would be close to the junction of the main line with the siding, and would foul the main line.

At 1.23 a.m. the excursion train from King's Cross passed the east signal-cabin at Luton at a speed of about 8 to 10 miles an hour, and immediately afterwards the engine of the train came into collision with the four empty passenger coaches, which were foul of the main line. The result of the collision was to drive the empty coaches back up the siding, and to break the vacuum pipe on the front of the engine of the excursion train, thereby causing the continuous brake to be instantaneously applied to all the wheels of the train, and bringing it to a standstill in two or three yards. It is possible, as suggested by driver Watson, that the shock experienced by the passengers was due rather to this sudden and automatic application of the continuous brake than to the collision itself.

The above appears to me to be the only possible explanation of the manner in which the collision occurred, and it is consistent with those facts disclosed in the evidence about which there is no doubt whatever. At the same time it must be admitted, some of the witnesses make statements in their evidence, which do not bear out the above arguments. Foreman porter Gough is positive that he screwed down the hand-brake in the rear-brake compartment of the four empty coaches at the time that they were placed in the platform siding. Assistant shunter Davis, whose duty it was to sweep out the empty coaches and prepare them for the next day's work, and who is the only man who is known to have entered the coaches during the night, is sure that he did not touch the brake in the guard's compartment while performing his duties as cleaner. If both these statements are correct it is difficult to account for the fact that the coaches must have travelled at least 50 yards from their original position so as to foul the main line, unless the impetus given them was considerable. I do not attribute to Gough any wilful misstatement when he says he screwed down the hand-brake. He gave his evidence in a manner that impressed me with his desire to speak the truth, and I feel bound also to accept the assertion of Davis that he did not meddle with the hand-brake, for no possible reason can be assigned for his doing so. But the fact remains that immediately after the collision the hand-brake was examined by Gough, and it was found to be released. The only explanation of the discrepancy would seem to be that foreman porter Gough is mistaken in thinking that he actually screwed down the hand-brake, though, doubtless, he intended to do so.

To reach the engine-shed, the engine, with the brake-van attached, had to enter the western end of the platform siding, and it is admitted that there was so little room between the points of the cross-over road and the waggons in the siding, that the engine was unable to clear the lock-bar of the points, and it is, as I have already stated, not improbable that the brake-van came into contact with the waggons and gave them a slight push, which was communicated to the empty coaches. But against this assumption must be set the statements of foreman Gough, driver Lawrence, and fireman Hart, all of whom are positive that the brake-van attached to the engine did not touch the waggons. Driver Lawrence was not on his engine, but was standing near the points of the cross-over road, which would be at least 60 yards from the end of the waggons. The night was dark, and as he should have been on his engine his evidence on this point does not carry much weight. Fireman Hart who had been left alone on the engine to take it to the shed acknowledges that there was barely room for the engine and brake, between the points and the waggons, and that he was unable to clear the lock-bar, and it is possible that the brake-van touched the waggons without his feeling the shock on his engine. Foreman porter Gough was directing the shunting operations, and should have seen whether the waggons were disturbed or not. He asserts that there was a space equal to the length of two waggons between the brake-van on the engine and the waggons in the siding, but this is in direct conflict with Hart's evidence, as, if there had been this space, there would have been no difficulty in clearing the lock-bar. It seems, therefore, probable that these three men were mistaken in their assertions that the brake-van did not touch the waggon. There is no doubt that the empty coaches were in their proper place on the siding clear of the main line at 12.5 a.m., for the engine of the up goods train which arrived at that hour had to pass through the points at the eastern end of the station in order to reach the down line, and at that time all was clear. After this no other train or engine passed the points, and no shunting took place in the platform siding, with the exception of the movement of the goods

engine and brake-van into the engine-shed. Whatever it was that caused the coaches to move must therefore have occurred between 12.5 a.m. and 1.23 a.m.

There was not sufficient wind to impart any motion to the coaches, and it was moreover blowing in the wrong direction, and as no other reason can be suggested to account for the movement of the coaches from their original position in the siding, the conclusion is forced upon me that the engine and brake-van, while being shunted into the engine shed, came in contact with the goods waggons at the west end of the platform, and that the motion thus imparted to them was communicated to the empty coaches which were standing unbraked close to the waggons, and caused them to move a few yards towards the east, so as to foul the main running lines.

As however, there is no direct evidence, I am not in a position to attribute negligence or carelessness to any one of the servants of the Company. Driver Lawrence put himself in the wrong by getting off his engine before it reached the shed, but as he remained on the ground to watch the manner in which fireman Hart handled the engine on its way to the shed I do not attach much importance to this slight irregularity. He had been on duty at the time for 8 hours 10 minutes.

The collision shows the disadvantage and risk of using a loop line which is not provided with safety points, as a siding for goods waggons and empty vehicles. I was informed that some time is likely to elapse before the platform line in question is required for passenger traffic. Under these circumstances I would recommend that this platform line should be regarded for the present as a goods siding, and be provided with properly interlocked safety-points at each end, such points being, if necessary, removed whenever it is proposed to bring the line into use for passenger traffic, due notice of which should be given to the Board of Trade in the usual manner.

I have, &c.,

H. A. Yorke,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Damage to Engine.	Damage to Rolling Stock.
Engine No. 125.—Heading buffer-beam broken; both plates bent; side chains broken by collision, and vacuum pipes crushed; life-guards broken off, and both buffers slightly damaged.	Composite No. 340.—End smashed in and under carriage damaged. Composite No. 287.—End smashed in and under carriage damaged.

Printed copies of the above Report were sent to the Company on the 26th September.

GREAT NORTH OF SCOTLAND RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
21st August 1893.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 8th instant, the result of my enquiry into the circumstances attending a collision which occurred on the 2nd instant at Tillynaught junction, on the Great North of Scotland Railway.

In this case three loaded passenger carriages and a brake-van, forming part of a mixed train, due to leave Tillynaught junction for Banff at 7.25 p.m., were allowed to run down from the platform towards the loop-points, beyond which the engine and 11 loaded waggons were standing, in order that the two portions of the train might be connected, but, the engine and goods waggons having been started back to make this connection in the usual manner at the platform, the two portions came into collision between the loop-points and the station, before either of them could be brought quite to a stand.

The collision was a slight one, and no vehicles left the rails or were much damaged; but five passengers are stated to have been slightly injured.

Description.

At Tillynaught there is a connection, although not a running junction, between the single line from Aberdeen to Elgin viâ Portsoy and Buckie, running from south to

north, and the single line to Banff, which diverges on a curve to the north-east. There is a passing loop on the former line, with two platforms, and the branch runs in at the back of the up platform, the station being a terminal one for branch trains.

There are two signal-cabins, one at the south and one at the north end of the up platform. There are goods sidings on the outside, or east side, of the branch platform line, these sidings being entered from the branch by facing-points north-east of the station.

The branch line alongside the platform is on a gradient of 1 in 260, falling northwards, and then falls towards Banff on a gradient of 1 in 95.

The following distances along the branch from the south end of the platform should be noted:—

To footbridge	72 yards.
„ north cabin at north end of platform	128 „
„ branch starting-signal	166 „
„ point of collision	235 „
„ facing-points on branch	272 „
„ up branch home-signal	283 „
„ down branch advance starting-signal	453 „

Evidence.

Alexander Morrison states: I have been over 18 years in the service, and station-master at Tillynaught junction for nine years and four months. On the 2nd instant I was on duty at the station. I came on duty at 7.30 a.m. and my hours of duty last until 7.30 p.m. or a few minutes after that time. At 7.25 p.m. the carriages composing the train due to leave for Banff were standing at the branch platform, loaded, and ready to start. There were three carriages, with a brake-van at the front of the carriages. Guard James Robertson was in charge of the train. There were 11 loaded goods waggons standing on the goods siding, and these waggons had to be attached in front of the passenger vehicles to Banff. The engine, which had brought the train from Banff, was on the sidings, having placed in one siding three waggons which had come from Banff, and it then was attached to the 11 waggons for Banff. In accordance with the usual practice the engine pulled these 11 waggons out in to the branch line, at the north end of the loop and came to a stand pretty near the advance starting-signal. I then gave orders to the guard to allow the carriages to run down the incline to be attached at the rear of the goods waggons. Sometimes, especially when traffic is heavy, that is the way that these trains are made up, but usually the engine pushes the waggons back on to the carriages. It is not usual for me to let the driver know in which way it is going to be done, and I did not tell him that evening. In fact I have never done so. The quickest way is to let the carriages run down to the waggons. The engine could have pushed the waggons back, but not so quickly on the rising gradient as the carriages could run down. There was some drizzling rain at the time, and the rails were greasy. The guard on getting my signal released the brake and allowed the carriages to run down. I was myself on the foot-board of the van, on the platform side. At the time we started the engine and goods waggons were at rest. We had nearly reached the north end of the platform, and were moving at scarcely a walking pace, when I saw the engine starting to push the waggons back. I at once called to the guard to put on his brake. The van was then near the starting-signal. I stepped off, ran across the line in front of the van on to a bank on the other side, and held up my arm to stop the driver, shouting out at the same time. At that time the rear waggon was, as far as I can remember, near the loop points, moving back at a walking pace. I think the driver saw me at once, because he shut off steam and had come almost to a stand before the collision occurred. I think in another waggon's length he would have come to a dead stand. The carriages were running very slowly when the van struck the waggons. The collision took place nearly opposite to where I was standing, between the crossing and the points. No wheel left the rails, and no passengers made any complaints to me of injury. The train was coupled up and went off to Banff. I think there were between 15 and 20 passengers in the train. Before commencing to run down to the waggons the brake-van attached to the carriages was standing nearly opposite to the foot-bridge. The practice adopted on this occasion is really not at all common. It has happened twice since July 8th. It is never done when the waggons are few, but there is no special rule on the matter. The signal-porter went down with the engine, and was coming back on a waggon.

William Todd states: I have been about 29 years in the service, and 16 years a driver, accustomed to drive on the Banff branch all that time. On the 2nd instant I came on duty at 10.30 a.m., to work till about 9.30 p.m. I had left duty at about 9.40 p.m. on the previous day. After pulling out the 11 waggons on to the main line, my engine stood near to the advance starting-signal. These waggons had to be attached in front of the 7.25 p.m. train for Banff, which was standing at the platform. Waggons are attached in front of several of the Banff trains. The proper way to do this is for the engine, after a signal is given from the signal-cabin, to push the waggons back on to the train. Sometimes, but not often, the carriages are allowed to run down on to the waggons. This is the case only when the number of waggons is considerable, so that it would take longer to push them back. Sometimes, but not always, I have been informed when the carriages are to be let to run down. On this occasion I was not told. I got the usual signal to set back, and I started. I was engaged with the sand-valve, as the rails were very greasy, so I did not look at the carriages before starting, as I did not expect them to come down. When I had got about 50 yards back I saw the station-master holding up his arms and signalling to me to stop. I was then moving at a speed of three or four miles an hour. I at once shut off steam, reversed my engine, and applied the brake, and my engine was actually at a stand when the collision occurred. I am sure that my engine did not run as much as its own length before stopping after we got the signal, but of course the waggons did not stop until they had extended the couplings. I did not see the carriages before the station-master signalled to me. I did not hear anyone call out to me before I saw the station-master signal. My engine (No. 7A) is a six-wheeled engine, with driving and trailing wheels coupled, and a four-wheeled tender. It is

fitted with a hand-brake on the tender only. I was going to Banff tender first. I have never heard of any previous accidents of this kind on the line.

James Robertson states: I have been nearly 19 years in the service and a porter all that time, and working as porter guard for about four years. On August 2nd I came on duty at Banff at 8.30 a.m. to work as porter till 5 p.m., and to act as relief-guard for three trips to Tillynaught and back. My duty would end at 8.45 p.m. I get an hour off for dinner and half an hour for tea. I was acting as guard of the 6.50 p.m. train from Banff to Tillynaught due to return at 7.25. When ready to start back the passenger portion of the train consisted of a brake-van, then a third-class carriage, then a first-class carriage, and then a third-class brake-carriage. These vehicles stood at the branch platform, ready to start, while the engine drew out 11 waggons to attach to the front of the train. The engine and waggons came to a stand near the advance starting-signal, and then, in accordance with the station-master's orders, I released the brake, and, after giving the carriages a start, they were allowed to run down to the waggons. I was in the van. I never heard any call from the station-master, but when my van had reached the north end of the platform I saw the engine commence to steam to push the waggons back. My speed was at that time more than a walking pace but not very much, and the nearest waggon to me was near the points. I put the brake on, but did not succeed in stopping, although I was almost at a dead stand before the collision occurred. It was a very slight collision. Nothing in the van was displaced. I only remember two previous instances of the carriages being allowed to run down to the waggons.

James Reid states: I have been two years and three months in the service, and signal-porter for about 11 months. I have been at Tillynaught since July 6th. On the 2nd instant, I came on duty at 5.30 a.m. to work till 5.15 p.m. I have two hours off duty for meals. I was in the south cabin till 10 a.m., and then in the north cabin. I left duty at about 5.15 p.m., but was on the platform when the Banff train arrived, and I went to assist in the shunting. I went down towards the advance starting-signal on the steps of the engine, but dropped off at the points. I put some sand on the rails, which were wet. I went towards the engine, and was putting sand down before the engine wheels, when it commenced to start back. I walked alongside the engine for some distance, and when doing so I saw the carriages coming down. I was putting sand down for the waggons. I called out to tell the driver, and went and put down one of the waggon brakes. I was standing on it when the collision occurred. The engine was nearly at a stand but not quite. The couplings of the three or four waggons between me and the engine were extended. The waggons were not moving at more than two miles an hour if as much. I heard the station-master calling to guard Robertson to put on his brake. That was after I called to the driver. I afterwards saw the station-master signalling to the driver to stop. Steam had been shut off before I went to put down the waggon brake. I have only once before seen the carriages allowed to run down on the waggons.

Conclusion.

This slight collision was due to an irregular mode of making up the mixed train, and the only person responsible is the station-master, by whose orders the operation was carried out, and who had at the time been on duty for nearly 12 hours.

It seems that the four passenger vehicles were standing at the platform, loaded, and ready to start, when the engine drew out from the sidings on to the branch, 11 loaded waggons, which were to be attached in front of the passenger vehicles.

The usual and proper practice is for the waggons to be backed on to the passenger carriages, but, as the waggons were several in number, and the rails rather greasy, the station-master, with the view of saving time, ordered the guard to allow the four passenger vehicles to run down towards the waggons. He had very foolishly omitted to give notice of his intention to the driver, who, when the carriages had run some 90 yards out of the 350 yards (about) which, before they started, had intervened between them and the engine, applied steam to push the waggons back. At the time he started the distance between the van at the front of the passenger carriages and the nearest waggon, was probably not above 140 yards, and, although the guard seems to have applied his brake as soon as he saw the engine begin to move, and the driver's attention was obtained by the station-master, without loss of time, and when the engine had propelled the waggons for about 50 yards, neither the waggons nor the passenger carriages could be quite stopped before the collision occurred, at a point about 70 yards from the spot where the guard applied his brake.

The Company has already given orders that this mode of making up mixed trains, which does not appear to have been common, is on no account to be adopted in future.

I must remark that it is not advisable to run tender-engines with the tender in front, as appears to be done on this branch, especially when there is no provision for applying sand in front of the wheels which are fitted with brake blocks.

The order issued under the Regulation of Railways Act, 1889, has not yet come fully into force on this line, which accounts for the engine and the passenger vehicles in this mixed train not being fitted with an automatic continuous-brake, as they will shortly have to be.

I have, &c.,

F. A. Marindin,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

Printed copies of the above Report were sent to the Company on the 20th September.

GREAT WESTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
October 26th, 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 18th ultimo, the result of my enquiry into the causes of the accident and collision which occurred on the 16th ultimo, in the Box tunnel, between Chippenham and Bath, on the Great Western Railway.

I opened the enquiry on September 20th, but was unable to conclude it until the driver and fireman of the up train, who were seriously injured, had recovered sufficiently to give their evidence.

In this case, the 9 a.m. down express train from London for Exeter ran off the line about half a mile from the west end of the Box tunnel, fouling the up main line, and almost immediately after it had stopped, about 238 yards from the first mark of derailment, it was run into by the 11.3 a.m. up passenger train from Bristol for Chippenham.

In the up train nine passengers and two Company's servants travelling as passengers were injured, one of the former having had both legs broken, and each of the latter having had one leg broken.

The driver and fireman of the up train were also seriously injured.

The down train consisted of a 6-wheeled single engine No. 3021, running chimney in front, 6-wheeled tender, third-class brake-carriage, composite, two third-class brake-carriages, third-class, composite, brake-van, third-class carriage, and composite brake, nine vehicles in all, coupled in the order given, the driving and trailing wheels of the engine and all the tender wheels being fitted with a steam-brake, and the vehicles with the vacuum-brake, both being applicable by the same tap on the engine, and both being automatic in case of severance of the train. In this train the engine was badly damaged, the tender (which fell over on its left side) slightly so, and all the vehicles were more or less damaged.

In the up train, which consisted of engine No. 3,240, a 6-wheeled engine, running chimney in front, with the driving and trailing wheels coupled, a 6-wheeled tender, a third-class brake-carriage, third-class and two composite carriages, four vehicles in all coupled in the order given, the brake arrangements being similar to those in the down train, the engine and the first two vehicles were badly damaged, and the third vehicle was slightly damaged.

The permanent-way was broken up for a length of about 220 yards.

The damage to rolling-stock and permanent-way is given in an Appendix.

Description.

The east end of the Box tunnel, which is one mile 66 chains in length, is about 99 miles 12 chains from Paddington and about 22 miles west of Swindon; the stations on either side of it being Corsham, about five-eighths of a mile distant from the east end, and Box about a mile from the west end. The tunnel is perfectly straight and is on a gradient falling westward of 1 in 100, which commences at the east end and extends a short distance beyond the west end and is then succeeded by gradients of 1 in 120, 1 in 330, and 1 in 660, still falling to the westward. The tunnel is approached from the east on a rising gradient of 1 in 660, which ceases about quarter of a mile east of the tunnel mouth, this quarter of a mile being level. Having been originally constructed for a double broad gauge line, the width of the tunnel is of course unusually wide (30 feet) now that the gauge is only 4 ft. $8\frac{1}{2}$ ins., and there is a 10-ft. space, instead of the usual 6-ft. space between the up and down lines.

The down line for 57 chains west of the west end of the tunnel and in the tunnel itself for a distance of 1 mile 34 chains, had been relaid with a cross sleeper road, taking the place of the former longitudinal road, between July 30th and September 3rd, the actual spot at which the accident commenced, which is 1 mile 25 chains from the east mouth of the tunnel, having been relaid on August 27th; on August 21st a notice had been issued restricting the speed of down trains, on account of the relaying of the down line, to 15 miles an hour between the east end of the tunnel and Box station, and this notice was cancelled on September 7th, when the new line was considered fit to be run over at full speed.

The new permanent-way consists of bull-headed steel rails in 32 ft. lengths, weighing 86 lbs. to the yard, of two-holed cast-iron chairs weighing 46 lbs., and of creosoted sleepers, 9 ft. long by 10 ins. by 5 ins., at 2 ft. 9 ins. central intervals

except at the joints, where the central interval is 2 ft. 3 in. The rails are fished at the joints and secured in the chairs by outside wooden keys, the chairs being fastened to the sleepers by two $\frac{3}{4}$ in. fang bolts in each chair. The ballast is of broken stone and gravel, one foot in depth below the under side of the sleepers, and when complete should be flush with the tops of the sleepers, but at and near the place where the engine left the rails it was not nearly complete.

The engine which drew the down express is a six-wheeled single engine, the driving wheels being 7 ft. 8 ins. and the leading and trailing wheels 4 ft. 6 ins. in diameter, the weights on these wheels being 19, 13, and 12·2 tons respectively, and the wheel-base being 18 ft. 6 ins., the centres of the leading and driving and of the driving and trailing wheels being 9 ft. 6 ins. and 9 ft. apart respectively; the leading wheels have a lateral play of nearly 2 ins. The engine has a double frame, and the wheels have inside and outside bearings; the outside leading springs are longitudinal, 9 ft. long at the top, and each consisting of nine plates; the top plate is attached at each end to spring hangers, secured to the framing. The vertical part of each spring hanger consists of a solid wrought-iron rod, 2 ins. in diameter and about 2 ft. long, opening out at the bottom into a jaw to receive the top plate of the spring; in the left leading spring hammer there was a weld in the rod about five inches above its junction with the jaw, and there was a concealed flaw in this weld. The lowest part of the spring hangers and of the buckles at the centre of the outside spring are about 14 inches and seven inches respectively above rail level; the inside leading-springs are spiral, each consisting of two coils about 5 ins. in diameter, the centres being $7\frac{1}{2}$ ins. apart.

The marks on the down line observed after the accident are as follows, the measurements being referred to the $100\frac{1}{2}$ mile-post:—

Inner Rail.

1. Mark on outer side of top of rail, 5 ft. long, commencing 84 ft., and terminating 79 ft. east of mile-post.
2. Outside key marked and chair broken, 79 ft. east of mile-post.
3. Next chair west, marked on 6-ft. side and broken.
4. Next two chairs west, marked on 6-ft. side.
5. Next chair but one west, broken and spread.
6. Chairs west of this broken and spread.
7. First mark on outside of sleeper, 61 ft. east of mile-post.
8. Engine supposed to have left rail with all its wheels at mile-post, after which only three rails remained upright till the engine stopped.

Outer Rail.

9. Rail and chair pressed outwards, a quarter of an inch, and inner web of chair marked, $63\frac{1}{2}$ ft. east of mile-post.
10. Three next chairs west, marked on the inner web, and gauge spread.
11. Two next sleepers west, marked in 4-ft. space, about 12 ins. from rail, and all chairs now broken up to a point $7\frac{1}{2}$ ft. east of mile-post, after which all the rails were gone.

Commencing at a point 157 ft. east of milepost, and extending westward for 78 ft., *i.e.*, as far as the first mark outside the inner rail, the line was bent inwards, the greatest deviation from the straight line being three inches.

The lowest plate of the outside spring of the left leading wheel of the engine was according to the evidence, picked up on the morning of the next day but one in the 6-ft. space, about 44 ft. east of the $100\frac{1}{2}$ mile-post, *i.e.*, about 35 ft. west of the first mark on the outside of the inner rail, other pieces of this spring, including the top plate with a piece of a broken spring hanger attached to it, having been picked up further to the westward, but the exact spot at which they were found could not be stated.

There was a great deal of old permanent-way material lying in the space between the up and down lines, and against this the engine, after it left the rails, must have been continually knocking.

Evidence.

1. *George Bowden*, signalman; seven years' service, six years signalman.—I have been all the time in the east cabin Box tunnel, where I came on duty on the 16th September, at 8 a.m., for 12 hours on that day, owing to the relief man being away, my usual hours being 10; Corsham station on the east, three-quarters of a mile distant, and Box station No. 1, $2\frac{3}{4}$ miles west, being the next adjacent block stations. At 11.44 a.m. I was asked for "Line clear" for the 9 a.m. down train. I accepted the signal, and gave the signal on to Box No. 1 at 11.50 a.m. Box No. 1 received the train at once, and I lowered my home

and distant signal for it. The train was given "In" from Corsham at 11.50 a.m., and it passed at 11.51. The train passed, I think, at a rather slower speed than usual, though I am aware of no reason to account for it. The train is due to pass at 11.22 The hour of passing on 11th was 11.39 a.m.; 12th was 11.28 a.m.; 13th was 11.30 a.m.; 14th was 11.34 a.m.; 15th was 11.42 a.m. "Line clear" was asked for the 11.3 a.m. up train from Bristol at 11.50 a.m. I accepted the signal at once, and I got it accepted from Corsham at 11.56 a.m., there having been a goods train "On line." I lowered my home and distant signals at the same time. The train was given "On line" at 11.52, and did not arrive. I did not hear the crash of the collision. A platelayer named Horsell was the first to inform me of it. He reached the box at 12.17 p.m., and I sent to Corsham to keep all trains back. The previous down train, the 11.30 a.m. from Chippenham, had passed at 11.44 a.m. having been given "On line" at 11.42. I observed nothing unusual in the 9 o'clock train as it passed, except that the speed was a little slower than usual.

2. *Edwin Bow*, signalman; six years' service, 3¾ years signalman.—I have been all the time in Box cabin No. 1, where I came on duty at 8 a.m. on the 16th for 12 hours. My hours are regularly 10, but the relief man was away on a holiday. I was asked for "Line clear" for the 9 a.m. train at 11.49. I asked "Line clear" from No. 2. I obtained it at once, and gave it back to east end at 11.49, and I took off my signals at 11.51 on receiving "Train on line." At 11.39 a.m. Box cabin No. 2 asked "Line clear" for the 11.3 a.m. train from Bristol. I at the same time gave "Line clear." At 11.50 a.m. I asked the east cabin for "Line clear," as there had been previously a goods train in the tunnel, which was cleared at 11.50 a.m. The up train passed my cabin at 11.51½ a.m. I had given the train "On line" to the east cabin at 11.51 a.m. The train was going slowly when it passed my cabin, it having stopped at the station. My cabin is about three-quarters of a mile from the tunnel mouth. The first knowledge I had of something being wrong was at 12.3 p.m., when I saw a man running from the direction of the tunnel asking for a tank-engine to be sent up, and at 12.14 p.m. I heard from the guard of the up train that there had been a collision. The up train was due to pass my cabin about 11.47½ a.m.

Charles Hayes, driver; 32 years' service, 20 years driver.—I have been running on the main line all the time with goods or passenger trains, and since 1887 with express passenger trains. On the 16th September I was driving engine No. 3021, "The Wigmore Castle," a six-wheeled engine with a single driving-wheel, 7 ft. 8 in. in diameter. The leading wheels have about 1¾ ins. play. The cylinders are inside, the axles have double bearings. I have had the engine since last February. I considered it a steady engine. I signed on duty at Paddington at 7.55 a.m. to sign off at about 5 p.m. My fireman was William Gibbons, who has been with me 1¾ years. I started punctually from Paddington at 9 a.m. The train consisted of engine, tender, 10 eight-wheeled vehicles and one six-wheeled vehicle. I dropped the six-wheeled carriage at Didcot, and another carriage at Swindon for Cardiff, and picked up an eight-wheeled carriage to slip at Chippenham. The brake on the train consisted of a steam-brake for the engine and tender, and vacuum-brake for each of the wheels of the coaches, both brakes being applied by the same handle on the engine; the steam-brake is automatic as well as the vacuum-brake. We left Swindon at 11.22 a.m., 28 minutes late, having lost time at Reading and Didcot, and at Ashbury crossing, in consequence of soldiers being loaded at Shrivenham station, and there was a further detention at Swindon. Bath was the next stop to Swindon, and I lost a minute between Swindon and Chippenham owing to the engine priming, and I think my speed on entering the Box tunnel did not exceed 44 miles an hour, this being somewhat slower than usual owing to the engine priming. I had shut off steam just before entering the tunnel on account of the falling gradient and had not put it on again before the accident. I do not think speed had increased before the accident, when the train was running without steam with the reversing lever in full forward gear, and the brakes all free. I was standing on the right side and my fireman on the left, when without any warning the right leading wheel seemed to drop outside the right rail, there having been no previous oscillation. I think the engine ran a short distance before the trailing-wheels left the rails as there was a tremendous lurch and the engine then began jumping about and finally stopped with the right leading wheel I think over the inside rail of the up line, or at any rate the right-hand side of the buffer-beam was foul of the up line. The tender fell completely over on its left side, remaining coupled to the engine and close up to the first vehicle. I made for the brake directly I felt the engine off the rail, but missed it just as, I think, the driving-wheels left the rails, and then, or when, I think, the trailing-wheels left the rails, I put the brake on with full force. Neither I nor the fireman was much hurt. On the train stopping the fireman blew the brake-whistle three times, he remarking that an up train was due. I got off the engine on the right-hand side, passed between the engine and tunnel wall, and as I passed the end of the engine, the brake-whistle ceased sounding. I continued groping my way along and shouting, until I heard the up train approaching in the tunnel, and stood against the wall as it passed, shouting to the driver, (I had no lamp) and the collision took place when I was opposite the last vehicle but one in the train, which consisted of four vehicles. The driver and fireman of the up train told me afterwards they had heard some shouting. The engine was steaming when it passed me. I do not think the brakes were applied. I think there may have been three minutes, certainly, not more, from the time of my engine stopping to that of the collision. I made no examination of the road directly after the accident, but after helping to relieve the passengers I went up to where the engine left the rails before anything had been touched. I saw a broken chair and some sleepers broken, but I saw nothing to account for the engine leaving the rails. I saw no one working near the place of the accident. I had passed the spot with the 10.15 a.m. train from London the day before and felt nothing unusual. There had been a notice for reduction of speed to 15 miles an hour, on the down line from August 21st to September 7th, after which latter date we resumed the usual speed.

4. *James Gibbons*, fireman, 13 years' service, fireman 10 years.—I have been two years with Hayes, with whom I was working on the 16th September, my hours being the same as his. My place was on the left side of the engine. I agree with Hayes' evidence up to entering the Box tunnel, Inspector Greenaway who had joined the engine at Swindon, having told him to shut off steam. When the accident took place I was standing in the left-hand corner of the foot-plate against the fire-box when I felt a sudden jerk without any previous oscillation, the wheels going off into the 6-ft., then making for the up line, then across again and then stopping foul of the up line, the tender falling over on its left side. I know the driver applied the brake when the engine ran off. I stood holding on to the water gauge rod till we stopped. I then said an up train was due and blew the brake whistle three times, not having then heard anything of the up train. After this I got off and tried with the inspector to light the gauge lamp, but could not manage as the draft was too strong. I then heard the up train enter the tunnel and the inspector and I went down the tunnel to try and stop the train. I had not gone very far, not more than three coach lengths from my engine, shouting, when the engine passed me, without its

brake on and struck my engine. The inspector was alongside of me. My mate had got off the engine on his own side and was going along on his side. I did not go back to look at where we ran off. There may have been 2½ minutes between the accident and collision. I heard no whistle from the up train at any time.

5. *William Greenaway*, locomotive inspector, 35 years' service, four years inspector.—I joined the 9 o'clock down train at Swindon and travelled on the engine. I noticed the engine priming between Swindon and Chippenham and a minute was lost in consequence. We entered the Box tunnel at a speed of 45 miles or perhaps a little more. I told the driver to shut off steam and blow his whistle as there were a great many workmen about. The speed remained at about 45 miles an hour on account of the falling gradient. Steam was not put on again. I was standing close behind the driver on the right-hand side, with my right hand on the reversing gear and had entered the tunnel about 1½ miles, when the engine suddenly left the rails at the leading end, running off as if it was going into the ground, and then began tumbling about. I could not say whether the driver applied the brake, but he says he did. The engine came to rest with its right leading wheel nearly up to the left rail of the up line and with the tender on its left side. I at once got off into the 6-ft., telling the driver to blow the whistle, which was done three times. I then tried to light the gauge lamp but the draught was too strong and while I was doing this, I heard the up train coming. I got a short distance towards the up train shouting and falling down on the way, and had got about 30 or 40 yards forward, when the up train passed, and when the collision took place I was opposite about the second carriage of the up train. The steam was blowing off strong from our engine. There was no means of keeping the whistle open except by tying it, and I do not think it would have been of much use if it had been, on account of the noise of the steam. We could not get at the detonators, the tender being turned over. I went back to Box as soon as I could. I saw no cause for the engine leaving the rails. There was about two minutes between our stopping and the time of collision. All the wheels of the engine and of the three first couches of the up train were off the rails. I cannot speak as to the tender wheels.

6. *John Hutchings*, guard, 16 years' service, 10 years guard.—I came on duty at 8.15 a.m. on the 16th September, to sign off about 5.10 p.m., and was front guard of the 9 a.m. train from Paddington for Penzance. I was in the brake compartment next the engine. The train was late on leaving Swindon, and I did not observe anything unusual in the speed between Swindon and the Box tunnel, nor did I notice whether steam was shut off before entering the tunnel. Nothing attracted my attention before the accident, which took me completely unawares, when I felt great oscillation and after running from about 150 to 200 yards the train came to a stop, I having been knocked down twice. I could not say how long my train had stopped before the up train ran into it. I remember hearing the brake whistle once. I believe the whole of my train was off the road. I was not seriously hurt and I heard no complaints from any one in my train.

7. *William Nelder*, guard; 32 years' service, 20 years guard.—I commenced work at 8 a.m. on the 16th September, to sign off at 5 p.m. I was in charge of the 9 o'clock down train, which consisted from Swindon of brake third, third, composite, brake third, third, composite, one van, one third, brake composite, slip coach for Chippenham, and horse-box, 11 vehicles in all, all eight-wheeled except the horse-box; the two last vehicles were slipped at Chippenham. I was riding in the seventh vehicle. We were delayed first at Reading four minutes, at Didcot four minutes, and at Swindon 19 minutes, and we left Swindon 27 minutes late, having next to stop at Bath. We lost a minute between Swindon and Chippenham, and I think we entered the Box tunnel at the usual speed, and had got three parts of the way through it when I felt a jolting, and the train then stopped, and 1½ minutes afterwards the collision took place, I having heard a rumbling noise before the noise of the collision. I was on the ground on the 6-ft. side when it occurred. The whole of my train was off the rails; all in line, and about a foot from the right-hand rail. I could find no cause for the engine having left the rails. I saw no workmen near the spot. No one was injured in my train. There were about 110 passengers. My train was not knocked back by the collision. It came to a stand at 11.54 a.m., my watch being right. I heard the brake-whistle given before the collision. Guard Ratcliffe went back to protect the train, but I do not think he had got any distance before the collision occurred.

8. *William Floyd*, driver; 29 years' service, 23 years driver.—I was driver of the 11.30 a.m. passenger train from Chippenham for Bath on the 16th September. I passed through the Box tunnel next in front of the 9 a.m. down train. I was running through it at a speed of about 28 miles an hour. I noticed nothing unusual in passing through the tunnel either on that occasion or the day before, or on any previous day. I was keeping time, and am allowed seven minutes for 3½ miles.

9. *William Woodward*, guard; 21 years' service, 11 years guard.—I commenced work on the 16th September at 10.50 a.m., to sign off at 10.50 p.m. I was in charge of the 11.3 a.m. train from Bristol for Chippenham. It consisted of a brake third, third-class, composite and composite brake, the two brakes having eight wheels. We left Bristol one minute late, and Box, the last stop, three minutes late, having next to stop at Corsham. We left Box at 11.50 a.m., I being in the rear brake. We entered the Box tunnel at a speed of about 25 miles an hour, the usual speed on the up journey. I had no warning whatever of a collision until I was knocked over in my van, but was not hurt. The time of collision was about 11.54. I had heard no whistle nor shout. I got out immediately, and found no wheels off the rails in the vehicles of my train, but the front brake and vehicle next it were damaged. I saw the fireman of the down train, and then went back to Box for assistance and to report the accident. The tunnel was very thick as I went back. I think my engine ran in with steam on and without any application of the brake.

10. *Thomas Weare*, ganger from Corsham to within half a mile of west end of Box tunnel, *i.e.*, from the 98½ to the 100⅓ mile-post; five years' service, three years ganger.—I came on duty on the 16th September at 6 a.m. to remain till 5.30 p.m. I had walked along the 4-ft. of the down line in the tunnel past the spot where the run-off took place on Friday afternoon, 15th September, about 2 p.m., and at that time there was nothing wrong with the road. I walked through part of the tunnel again on Saturday morning as far as the 100th mile-post, but then turned back to meet a ballast train and get my breakfast. Before I turned back I had seen Coombe (the foreman platelayer of the district) coming through from the Box end on the down line. It was my duty to have gone through, but I thought Coombe would look at the last half-mile. Coombe afterwards told me that the road was straight and looking very well. I next saw the road after the accident, and the first mark I saw was on the outside of the key of a chair of the rail next the 6-ft., and then two chairs broken, and two not damaged, after which the road was torn out. I gauged the road and found it right until it was broken up. I noticed that to the east of the mark on the key the road was bent towards the 6-ft. space. The ballast now is in much the same

state it was then. I know that there had been restriction of speed up to a few days before the accident, and I do not know why it had been removed. I had done no work at or near the spot since the relaying about three weeks since. The 9 a.m. down train had passed me about a quarter of a mile from the east end of the tunnel, and I had no idea that it was going faster than usual. I did not notice whether steam was on or off. I have no idea why the engine left the rails. I could see no reason why the road was not fit for trains to run on at full speed. On the Friday I had taken out two or three slacks near the shaft.

11. *Stephen Coombe*, 30 years' service, two years foreman platelayer from Bristol to Thingley junction.—I walked through the Box tunnel on the down line between 9 and 10 a.m. on the 16th. I had a lamp. I examined the road and I consider it was in good order, fit for running at any speed. The ballast then was in much the same condition as now. I saw nothing wrong in any part of the road. I saw the road again soon after the accident. I observed a bend in the road before the mark on the key, but I did not measure the length or amount of the bend. I am sure this twist was not in the road when I walked it in the morning.

12. *Charles Baughan*, district inspector of permanent-way between Bristol and Thingley junction.—I have been in that position 13 or 14 years, and have come to my present work during the last 10 weeks. I had examined the down road of the Box tunnel on Wednesday the 13th. I had gauged it. Everything was right as regards the rails and sleepers; the ballast in the same condition it is now. I rode over it on Thursday the 14th September, in the last compartment of the 9 a.m. down train from Paddington, and felt nothing wrong. I next saw it at 2.30 p.m. on the 16th. The first mark I noticed was on the outside of a chair, the key of which was bruised and the sole broken. After this two chairs were missed, and then others were broken, and the road was soon after broken up. I observed no mark on the top of the rail east of the first broken chair. I observed east of the first broken chair that the line was bent in towards the 6-ft. space for a length of about 50 feet, but it was not more than three inches out of line. I came to no conclusion as to the cause of the derailment. There had been a restriction of speed to 15 miles an hour during the relaying and until the line was safe, and by my advice this restriction was taken off on the morning of the 8th. Between the 8th and 15th no distortion of the road had been observed, and I thought that there was sufficient ballast to warrant full speed.

13. *Thomas Keeling*, driver; 39 years' service. driver 22 years.—On 16th September I signed on duty at 10 a.m., to sign off at 10.35 p.m. I was driving engine No. 3,240, six-wheeled engine, with the driving and trailing wheels coupled, inside cylinders, and a six-wheeled tender. I joined the 11.3 a.m. passenger train from Bristol to Chippenham at Bristol, The train consisted of four vehicles, the last vehicle being a brake composite. The vacuum-brake was fitted to the four vehicles, the coupled wheels of the engine and the tender having a steam-brake, both brakes being applied by the brake-tap on the engine. The steam brake as well as the vacuum-brake were automatic in their action. The engine was running chimney in front; my place was on the right side, and my fireman's on the left. I left Bristol one minute late, and stopped at all stations up to Box, which we left at 11.49 a.m., two minutes late, having lost a minute at Keynsham station, the vacuum-gauge showing 25 inches. On leaving Box I got the up-starting and up-advance signals off, and I entered the tunnel at a speed of about 25 miles an hour, having next to stop at Corsham, being allowed nine minutes for the run of about 3¼ miles. I had been running in the tunnel, for about half a mile, the tunnel being full of steam and smoke, as it had been all the week, when I heard some one call out "stop" very loud from the 6-ft. side, just beside me. At this time the regulator was about half-way open, and the speed about 25 miles an hour. On hearing the shout I left go of the regulator and looked round. I at once went back to the regulator, and as I was doing so I was pitched up against the fire-box by the sudden stopping of the engine, but I cannot be certain whether or not I closed the regulator, or applied the brake, though I have been told since that steam was shut off, and the brake applied. I did not lose consciousness, but was jammed up against the fire-box, I believe, by coal coming from the tender, but I was able to liberate myself. I found I could not get out by the foot-plate on my own side, so I crawled over the tender and got over the right side on to the trailing-spring and let myself go, but tumbled down on to the ballast, dropping further than I expected. After groping my way about and finding that I had run into another engine, and sending back the fireman, who was also injured, with a lamp to protect the train, I was found by Inspector Greenaway, who ordered me to go back to Bath Hospital. I had my right shoulder dislocated by the collision, and was scalded in the left hand, and I am still on the sick list. The shout was the only thing I heard. I heard no whistling while I was in the tunnel, and I do not think I could have done so, on account of the noise my engine was making. Just before the shout the atmosphere in the tunnel was very thick. I had not been running through the tunnel on the down line for some length of time. The leading wheels of my engine were off the rails. I cannot speak as to the other wheels. My watch stopped at 11.55 a.m., but I cannot be certain whether this was the time of the collision as the face was injured.

14. *Alfred Hales*, fireman; 12 years' service, 10 years fireman.—I had been working with Keeling for six days before the collision. My hours were the same as his on the 16th September, when I was fireman of the 11.3 a.m. up train from Bristol, my place being on the left-hand side of the engine. The journey went all right from Bristol to Box, which we left a few minutes late, the vacuum gauge showing 25 inches. We entered the Box tunnel at the usual speed, and we had gone into it for nearly a mile when I heard some one holloa out from the 6-ft. side. I did not hear what he said. Immediately after this my engine struck the other before my driver had time to do anything, not even to shut off steam or apply the brake. I was looking through the window, with my right hand on the safety-valve balance. I was thrown about on the foot-plate, but remained on my feet, and was insensible for some little time. When I came to myself I found I was jammed in with coal. I shook myself loose and found myself scalded on the left hand, and with a blow on the back of the head. After trying to find my mate, I got out on the 6-ft. side and found my mate against the tunnel wall on the down side. I then got a coach-lamp and got on the foot-plate, and found the steam gone, and then told my mate I would go back to protect the train; I got as far as the mouth of the tunnel and there met Mr. Greenaway on an engine coming up. He stopped the engine and I got up on it and returned with him. When I heard the shout the tunnel was full of steam and smoke. There was no other noise except from our own engine. I had heard no whistling from the time of entering the tunnel up to the collision. I do not think I should have heard it had there been any, on account of the beat of my engine. My watch was not stopped by the collision, and I do not know the time it occurred. I am still on the sick list.

15. *Charles Curtis*, platelayer, 11 years' service; nine years platelayer. I am one of Coombe's gang, and I had been engaged in relaying the down line in Box

tunnel. I was not in the tunnel when the accident occurred, but I got there at about 3.20 p.m. on the 16th September, and was then engaged in repairing the road. On Monday the 18th September at about 6.20 a.m. I found a piece of spring plate about 14 inches long, about 44 feet east from 100½ mile-post, in the 6-ft., but nearer to the down than to the up line. It was lying bare on the ballast, it was a whole piece of metal. I thought it was the bottom leaf of a spring. On the Tuesday or Wednesday, I picked up some more pieces of springs to the west of where I found the first piece, but I cannot say how far to the west. After finding the first piece I took it westward and threw it along the wall on the up side. I had first intended to put it in the manhole opposite to where I had picked it up, but hearing someone call, I went westward.

Stephen Coombe (recalled): On the 19th September I found the plates of a spring, with the hanger attached to one piece. The first piece most eastward Curtis told me he picked up 44 feet east of the 100½ mile-post. When I saw the piece it was some distance west of the 100½ mile-post and had been brought there by Curtis. It was the lower plate of a spring about 14 inches long, not broken. On the same day I saw three more plates belonging apparently to the same spring, westward of the first piece, 8 or 9 feet apart, in the 6-ft. The same day I found another plate, with a broken hanger attached to it, westward again of the last of the other three pieces, this I took to be the top plate. I found no more pieces. The ballast was gravel and stone.

Charles Baughan (recalled): I hand in a diagram of the relaying of the down line in the Box tunnel, and also a statement of the ballast both in the tunnel and supplied for the relaying. This latter was unloaded from both sides of the waggons. None of the old ballast was removed; this was chiefly gravel, the new being gravel and stone. I saw the driver of the down express between three and four o'clock, in the tunnel, on the 16th September, and he told me that he was running easy through the tunnel, when he heard a tremendous bang like a cannon going off, and after this the engine gave two lurches and left the road. Thinking the bang might have been from the fracture of a rail, I examined the line and found no broken rails.

Charles Hayes (recalled): The bang I spoke of to Mr. Baughan I consider was when the leading wheels left the rails and struck the chair, and then the lurch was when the driving wheels left the rails at a broken fish-plate. There were three lurches in all.

16. *Moses Beazer*, platelayer; 15 years' service.—Working all the time between the 98th and 100½ mile-post. I was working close to the 99½ mile-post, on the up line, when the accident occurred. On the day before the accident I had been lifting a slack on the down line about the 100½ mile post. It was only a small slack, the sleepers being near the rock. We had to throw out no ballast to do this. We left the ballast above three parts up the sleepers, more outside the rails than between them, and also outside their ends. We were down at the place of the accident as soon as possible. I did not see where the engine left the rails, nor where the road was bent.

17. *William Fisher*, platelayer; five years' service.—My length is between the 98th to 100½ mile-post. I was working near the Corsham end of the tunnel when the accident took place. I had been working near the 100½ mile-post on the down road, a day or two before the accident, lifting and slewing; not much work was required. The ballast was in places above the level of the top of the sleepers; in other places lower; outside it exposed the bottom of the sleepers where we required to pack. In some places the ballast required removal to get at the packing; in others it did not.

18. *Frank Fletcher*, platelayer; four years' service.—My length is between the 98th and 100½ mile-post. I was working in the tunnel about half a mile from the east end on the down road when the accident occurred. I was down at the spot in about a quarter of an hour. I did not notice where the line was twisted. We had been working on the line near the 100½ mile-post the day before, packing up sleepers. There were no bad places. We had to move the ballast to get at the packing, throwing some inside and some outside, and it was thrown back afterwards. When we left, the ballast was about 2 inches above the bottom of the sleepers between the rails, and outside it was above the level of the top of sleepers and outside the sleeper ends.

After the withdrawal of the limited speed notice on September 7, 294 trains passed through the tunnel on the down line prior to the accident.

Conclusion.

The cause of the accident to the down express train, which led to the collision between it and the up train, is involved in a good deal of uncertainty. There is no doubt that the leading spring hammer of the left leading spring of the engine of the down express was broken through a concealed flaw somewhere near the spot where an engine wheel first left the rails, but whether this fracture was the consequence or cause of the accident is the difficult point to decide. It must have been a very heavy blow to have produced the fracture, for although there was a flaw in the hanger there was plenty of sound metal left, and it is difficult to understand what obstacle the spring can have met with to have caused it to break before the first mark of derailment. The first piece of a broken spring (the lower plate, about 14 inches long) is said to have been picked up in the 6-ft. space, 35 feet west of the first mark, and it is not easy to see how this piece of a left spring can have got into that position on the right of the line. It was not picked up till two days after the accident, and I think it may very probably have been moved eastward by one of the men engaged in repairing the road after the accident.

The evidence of the driver of the down express train, Charles Hayes, a man of 20 years' service as driver, and of express trains for the last six years, is to the effect that he entered the Box tunnel, having shut off steam just before doing so, at a speed not exceeding 44 miles an hour, a minute having been lost in running between Swindon and Chippenham, owing to the engine priming; that neither steam nor the brake was

applied in the tunnel, and that he did not think the speed had increased, when, without the least warning and without his having noticed any previous oscillation of the engine, the right leading wheel seemed to drop outside the right rail with a lurch and loud noise, followed by a second lurch when the driving wheels left the rails, and by a third and tremendous lurch when the trailing wheels left the rails, the engine then beginning to jump about, and finally stopping with the right leading wheel over the inside rail of the up line, and with the tender turned completely over on its left side, but still coupled to the engine, and with the first vehicle close up to it; that he tried to apply the brake when he felt the leading wheels of the engine leave the rails, but missed the brake-handle, and did not get it on till the trailing wheels left the rails; that upon the engine stopping the fireman blew the brake-whistle three times, while he got down on to the ballast, passed between the engine and the tunnel wall, groping his way along until he heard the up train approaching, when he stood against the wall and shouted to the driver as the engine passed, the collision occurring when the third vehicle from the engine was opposite to him; that he thinks there may have been three minutes, certainly not more, between his engine stopping and the collision.

The evidence of Gibbons, Hayes' fireman, and of locomotive inspector Greenaway who had ridden on the engine from Swindon, is to much the same effect as Hayes'. After the engine stopped Gibbons whistled three times, and he and Greenaway then got off the engine on the left-hand side, tried ineffectually to re-light the gauge glass lamp, when, hearing the up train approaching, they went forward to meet it, its engine passing them 30 or 40 yards from the engine of the express, they shouting to the driver as he passed. They estimate the time which elapsed between the express engine stopping and the collision at 2½ and two minutes respectively.

The guards of the train can throw no light on the occurrence, the rear guard stating that the accident occurred at 11.54 a.m., and the collision in about 1½ minutes afterwards. The front guard was knocked down twice after the train left the rails, and cannot estimate the time which elapsed before the collision.

After a careful consideration of the evidence of the servants of the Company in charge of the train, of the marks left on the permanent-way, of the state of the ballast, and of the damage to, and nature of, the engine drawing the express, I am disposed to attribute the cause of the accident to the engine of the express train when descending the gradient of 1 in 100 in the Box tunnel at a high rate of speed, having first bent the line inwards for a distance of 78 feet to the extent of three inches, thereby creating an irregular curve to the right and a consequent tendency of the right wheels to mount the inner or right rail, which they at once proceeded to do, there being no superelevation of the inner rail to resist this tendency. Owing to the lateral play of about 1¾ inches on the leading wheels of the engine, there would, on a straight line, such as the Box tunnel, and at high speed, be a tendency in these wheels to continual lateral movement, and I presume it must have been some movement of this kind which caused the bend in the line, the absence of full ballasting at and near the spot not affording the requisite amount of resistance to the effect of such lateral movement.

The argument against this view of the cause of the accident is derived from the position in which one of the spring-plates of the left leading spring of the engine was picked up two days after the accident, viz., in the 6-ft. space, about 35 feet west of the first mark of a wheel being off the rails, others of the spring plates having been picked up further to the west, but their exact position not having been noted. If the spring-plate fell from the engine in the place in which it was picked up, the blow which caused the spring-hanger to break and the spring afterwards to come to pieces, must have occurred at some short distance previously, but there is no indication from the marks left in the permanent-way that such a blow can have been received before the right leading wheel left the rails. I am therefore of opinion that, as I before stated, the spring-plate when picked up on the 18th ultimo can hardly have been in the place in which it originally fell from the engine, and that the fracture of the spring hanger and the coming to pieces of the spring was the consequence and not the cause of the accident.

With regard to the circumstances attending the collision, which occurred probably not more than two minutes after the engine of the down express had come to rest, with its right leading wheel in the 4-ft. space of the up line and its left leading wheel in the 6-ft. space, the driver and fireman of the express engine and the locomotive inspector who was riding on it appear to have done what was possible to warn the driver of the up train, who must have entered the tunnel about a minute after the express had stopped. In the confusion and darkness there must have been unavoidedly some little time lost

(after the fireman had given three brake-whistles) in going forward to meet the up train, and driver Hayes appears to have got forward from 40 to 50 yards, and the fireman and inspector a somewhat less distance, when the engine of the up train passed them, the driver of which train heard one of the shouts these men raised.

The evidence of Keeling, the driver of the up train, is to the effect that he had started from Bristol for Chippenham with the 11.3 a.m. up stopping train, consisting of engine, tender, and four vehicles, fitted throughout with the steam and vacuum brakes; that he had last stopped at Box and entered the Box tunnel, which was full of steam and smoke, at a speed of about 25 miles an hour, that after having entered the tunnel about half a mile, he heard some one call out "Stop" from the 6-ft. side, that on hearing this he let go of the regulator and looked round, and just as he again seized it he was knocked up against the front of the fire-box, not being certain whether or not he had shut off steam and applied his brake, which it afterwards turned out he had done. He was jammed up against the fire-box by coal coming forward from the tender, and though seriously injured and scalded, he managed to free himself, get off the engine, and send his fireman back towards the tunnel mouth to protect his train.

The evidence of Keeling's fireman is to much the same effect as his own. On the collision occurring he was thrown about on the foot-plate and was insensible for a short time. Though badly hurt he was able to go back as far as the tunnel mouth to protect his train.

The guard of the train, riding in the rear vehicle, was taken completely unawares by the collision. He was knocked down in his van but not hurt.

No blame is to be attached to the servants of the Company with regard to the collision. If, after the engine of the express train had stopped, the whistle could have been kept sounding, the driver of the up train might have heard it sooner than the shouting, but to have done this would have required someone to remain on the foot plate or the whistle to have been tied open, neither being practicable under the circumstances.

It was not in my opinion a judicious act on the part of Mr. Baugham, district inspector of permanent-way between Bristol and Thingley junction, to recommend the removal of the restriction of speed (which had been in force during the relaying operations) before the down line had been fully ballasted, which it certainly was not in the locality of the accident, where, when I saw the spot on the 20th ultimo, many of the sleepers were bare of ballast for a considerable portion of their depth, both between the rails and to a less degree outside them. The necessity for full ballasting was more particularly necessary in consideration of the long falling gradient of 1 in 100 on which very high speeds are sure to be attained, and the fact that the engine drawing the down express train was one of a class which were known, when running at high speeds, to exert a severe strain on the line.

I have, &c,
C. S. Hutchinson,
Major-General, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Particulars of Damage to Rolling-Stock.

Engine 3021, "Wigmore Castle," (down train).—Frame plates broken and bent; buffer-bar broken and bent; cylinders broken; axle-boxes, leading end, broken; springs, left-hand leading end torn off and broken; spring-gear damaged; footplates damaged; smoke-box damaged.

Tender of engine 3021.—Footplates, footstep plate, damaged; drag-bar, buffer-bar, damaged; brake-shaft and brackets damaged; drag-bar damaged; sand-boxes and feed-pipes damaged; two axle-boxes broken.

Engine 3240 (up train).—Frame-plates broken and bent; buffer-bar broken and bent; motion-plate broken and bent; cylinders broken; piston-rods and valve-spindles bent; reversing-shaft bent; motion broken and bent; footplates damaged; axle (leading) bent; axle-boxes (leading) broken; horn-blocks broken; smoke-box damaged; cab damaged.

Tender of engine 3240.—Nil.

Coaches of 9.0 a.m. train from Paddington.

No. 2234, third-class brake.—Both ends of body and frame badly damaged; step-boards and buffers broken, and bogie damaged.

No. 1368, composite.—End of body and frame damaged; step-boards broken; wheels and bogie damaged.

No. 2178, third-class brake.—Both ends badly damaged; roof, doors, buffers, step-boards, and bogies damaged.

No. 2250, third-class brake.—Corner of roof damaged; headstock and step-boards broken; end panels bent; bogies and brake-work damaged.

No. 2274, third-class.—Step-boards, head-stock, and axle-boxes broken, and bogies and brake work damaged.

No. 1042, composite.—Step-irons, axle-boxes and buffers broken; wheels, bogies, and brake work damaged.

No. 747, van.—Brake work, end of step-iron, &c. damaged.

No. 1802, third-class.—Brake work, end steps, bogies and buffer damaged.

No. 1338, brake-composite.—Brake work, steps, bogies, and buffers damaged.

Coaches of 11.3 a.m. train from Bristol.

No. 1579, third-class brake.—Body badly damaged, axle-boxes, bogie-plates, and step-boards broken; scroll-irons, axle-guards, and frame buckled, &c.

No. 2407, third-class.—Body and frame badly damaged.

No. 928, composite.—Body shifted, axle-boxes and buffer broken.

No. 591, composite.—Nil.

PARTICULARS OF DAMAGE TO PERMANENT WAY.

Down line.

Forty steel bull-headed rails 32 feet long; 228 creosoted sleepers 9′ × 10″ × 5″; 451 rail chairs; 13 pairs fish-plates; 160 rail keys; 72 fish-bolts; 430 fang-bolts.

Up line.

Five transoms; one bridge-rail.

Printed copies of the above Report were sent to the Company on the 14th November.

HIGHLAND RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
12th August 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 27th ultimo, the result of my enquiry into the circumstances attending an accident which occurred on the 18th ultimo at Dingwall station on the Highland Railway.

In this case, as the second portion of the 11.25 a.m. down mail train, which had left Inverness at 12.37 p.m., was entering Dingwall station at 1.15 p.m, the fifth vehicle in the train, a London and North-Western bogie saloon carriage, left the rails, and was followed by the eight vehicles next behind it, the train running for about 50 yards before being brought to a stand.

No person was injured.

The damage to the permanent way and to the rolling stock, particulars of which are appended, were inconsiderable.

The train was made up as follows, viz.:—

Engine and tender, North British saloon, one composite carriage, North Staffordshire horse-box, London and North-Western third-class carriage, London and North-Western saloon, brake-van, post-office van, one third-class, two first-class, and one third-class carriages, brake-van, luggage-van, one first-class and two third-class carriages, parcels-post van, and one composite carriage.

All the vehicles in the train were fitted with the automatic vacuum brake, except the London and North-Western saloon, which had a through pipe.

Description.

Dingwall station, the junction of the Skye line, is 18½ miles north of Inverness, and it has two platforms and a passing loop 663 yards in length.

The line through the station is practically level, and the approach to the station from the south is nearly straight and upon a falling gradient of 1 in 400.

The place where the carriage left the rails is just north of the trailing-points of a siding connection on the down line, close to the south end of the down platform, and the following distances northwards from the down home-signal, which is 677 yards inside the down distant-signal, should be noted, viz.:—

	Yards.
To south loop points and signal-cabin	120
,, trailing-points of siding connection on down line	362
,, south end of down platform	365
,, bookstall on down platform	434
,, point where engine came to a stand	483
,, water column on north end of down platform, where engine should have stopped	566

This section of the Highland Railway was opened for traffic on June 1862, but the up and down loops at Dingwall station, with the exception of the switches and crossings, have just been relaid, the operations having been completed a fortnight before the day upon which the accident occurred.

The permanent way consists of the following materials, viz. :—

Bull-headed steel rails, weighing 77 lbs. per yard, in 30-feet lengths; cast-iron chairs, weighing 37½ lbs. each; wrought-iron spikes, two to each chair, ⅞ inch in diameter; steel fish-plates, weighing 20 lbs. per pair; fish-bolts, four to each pair of blates, weighing 1½ lbs. each; Scotch fir sleepers, nine feet in length and 10 inches py 4¾ inches in section, placed at an average distance apart of three feet; teak wood outside keys. and gravel ballast, nine inches in depth below the underside of the sleepers.

The London and North-Western saloon which left the rails was built at Wolverton. It has two 4-wheeled bogies, an extreme wheel-base of 35 feet 6 inches, a distance of 27 feet 6 inches between the bogie centres, and a weight of 23 tons 0 cwt. 2 qrs.

The wheel-base of the bogies is 8 feet.

It was last in the shops for repair in July 1893, and was in good order, having been thoroughly examined before leaving the shops on July 15th, again at Euston on July 17th, and during the journey at Rugby, Crewe, Preston, and Carlisle.

Evidence.

Kenneth McLennan states: I have been 18 years in the service, and over seven years a driver, accustomed to drive over the line between Inverness and the North. On the 18th of July I came on duty at Helmsdale at 4 a.m. to run with the 5.30 a.m. train to Inverness, arriving at 11 a.m. I had left duty on the previous day at 8 p.m., after nine hours' duty. I took the 5.30 train to Inverness, and ordinarily my duty would have finished there, but on this evening I had to take the second portion of the 11.25 a.m. down mail to Tain, due at 1.2 p.m. My engine (No. 77) is an eight-wheeled engine with leading bogie and driving and trailing wheels coupled, and a six-wheeled tender. There were 19 vehicles, equal to 22, in the train. My engine, tender, and all the vehicles in the train were fitted with the automatic vacuum brake, except a London and North-Western saloon, No. 180, which had pipes only. I left Inverness at 12.39 p.m., and stopped at Beauly, which I left at 12.57. The next stop was at Dingwall. The distant-signal was at danger when I first sighted it, and I shut off steam sooner than usual on this account, probably 400 or 500 yards from the signal, when I was running at a speed of 35 or 40 miles an hour. When about 200 yards from the signal it was lowered for me. I applied a little steam, and passed the signal at a speed of about 35 miles an hour. The home-signal was off. I passed this signal at about 30 miles an hour. I had to run up to the north end of the platform to take water. I had shut off steam about 60 yards outside the home-signal. I first applied the brake a little outside the signal-box. I had 20 inches of vacuum, and I reduced it to 15 inches. I released it again after checking the train. I saw platelayers at work on the line at the entrance of the platform. I whistled for them to clear out, and they did so. At the same time that I whistled I applied the brake again, reducing the vacuum to 10 inches, and my speed was reduced to 12 miles an hour. After the platelayers had cleared off the line I released my brakes altogether, and let the train run on, at about 12 miles an hour. I was then opposite to the goods shed. I passed the trailing-points at a speed of about 12 miles an hour. I did not feel anything wrong when passing over the points. When my engine was nearly opposite to the book-stall I felt a jerk. I called to my fireman to look back, and he told me there was a saloon off the rails. I was then running at about four miles an hour, and was just about to apply steam to draw the train up. I looked to see what position it was in before applying the brake. It was out of line towards the 6-ft. side. I then applied my brake, and came to a stand exactly at the over-bridge. The saloon was the fifth vehicle in the train. I went back after the train had stopped. I found the saloon had all the wheels off. The five vehicles behind it were also off the rails, with all wheels, and all towards the 6-ft. side. The next three vehicles had the wheels on the platform side only off the rails in the 4-ft. way. I examined the road at the points. I found the first rail north of the switches burst out on the left-hand side. Some of the spikes were drawn. This was at the far end of the rail. I got the green flag or hand-signal. When the relaying was in progress, recently, there was a notice to slacken speed, but there were no flagmen out. The notice was withdrawn on the 14th or 15th July I think. I did not look at the rails south of the switches.

Hugh Shaw states: I have been nine years in the service, and a fireman for three years. I was fireman with Driver McLennan on the 18th July. I have heard his evidence, and it is correct. I applied my tender brake just after passing the signal-box, and kept it on all the time. It was not very hard on.

James Riach states: I have been in the service over 30 years, and 13 years a guard. On the 18th July I came on duty at about 10.30 a.m. to work till 5.25 p.m. On the previous day I left work at a little past 6 p.m. after about 10½ hours' duty. I was guard of the second portion of the down mail, which was made up as follows:—Engine and tender, North British saloon, Highland Railway composite, North Staffordshire horse-box, London and North-Western third-class, London and North-Western saloon, Highland Railway brake-van, Highland Railway post-office van, Highland Railway third-class, two Highland Railway first-class, one Highland Railway third-class, one Highland Railway brake-van, one Highland Railway luggage-van, one Highland Railway first-class, two Highland Railway third-class, Highland Railway parcels-post van, and one Highland Railway composite. I was riding in the rear brake-van, and there was another guard in the front van. We left Inverness at 12.37 and Beauly at 12.58. When I saw the signals at Dingwall they were off. I think our speed running into Dingwall was slower than usual. I did not notice where my driver shut off steam. My gauge showed 20 inches of vacuum. I think the driver commenced to work the brake near the distant-signal. I did not hear any whistle. After the driver first applied his brake it was never released altogether, that is the vacuum was never blown up to 20 inches again on my guage. It varied between about 7 inches and 15 inches. I felt no sudden application of the brake. The first I knew of any-

thing being wrong was when my van was approaching the siding-points. I looked out on the left-hand side, preparing to open the door to get out at the platform. On looking ahead I saw some of the vehicles out of line and apparently off the rails. At that time my vacuum gauge showed about 10 inches of vacuum. I immediately opened the valve and applied it at full power. When we came to a stand my van was a little north of the points. My van and the next vehicle behind it and all the vehicles in front, up and including the fifth vehicle, were off the rails. I estimate our speed to have been as follows:—At the distant-signal about 40 miles an hour, at the home-signal about 20 miles an hour, and at the time I was aware of the vehicle being off the rails about 10 miles an hour. It was a well loaded train. I could not find that anyone was hurt. I think my van left the rails just at the points. I looked at the road after the accident, it was out of gauge just beyond the points.

Alexander McDonald states: I have been nine years in the service, and a brakesman for eight months. On the 18th July I came on duty at Inverness at 11.25 a.m. to work till 5.25 p.m. The previous day I left duty at 2.30 p.m. after 6½ hours' duty. I was under guard of the 11.25 a.m. train, and was riding in the sixth vehicle in the train. I agree with Guard Riach as to the speed of our train when running into Dingwall. The first I knew of anything being wrong was when my van left the rails, at which time the speed was about 12 miles an hour. My van ran off just north of the points, and was opposite to the booking office when we came to a stand. I went to my brake to apply it, but found that it was on. The driver had first applied it slightly near the distant-signal, and then blew it nearly off. He applied it again near the signal-box, and released it again, but I cannot say how far. He must have applied it again before my van left the rails. It was a fine day. I did not examine the rails. There was nothing unusual in the speed when running into Dingwall. My van was clear of the points when it left the rails, perhaps three or four yards.

Hugh Chisholm states: I am inspector of permanent way, and am in charge of the line from Lentran to Bonar Bridge. Both lines through Dingwall Station have recently been relaid, the operations having been concluded about a fortnight before the accident. The only rails which were not relaid were the stock rails at the trailing-points of a siding at the south end of the platform. I ordered new sleepers to be put in under these rails, and the work was to be carried out on the 18th July by the relaying gang. I was at Dingwall myself. The five sleepers next south of the points were opened up in readiness for the work at about 12 o'clock. It was before the first portion of the 11.25 a.m. down train arrived. I was at that time on the platform, and I passed the points and went up to the goods shed. When the second portion of the 11.25 train arrived, I was about 80 yards south of the points. I cannot say that I actually saw the train leave the rails. It was coming in very fast, and I should say the speed when it passed me was 40 miles an hour. When the accident happened I went to the spot, and as soon as I was able to do so I gauged the road. I found that at the north slide chair the gauge was about 2 ins. wide, and the inside spike on the left-hand chair was out. The two outside spikes were in, but were bent. I had not examined them before the accident. After the accident all three spikes were in the right-hand slide chair. At the next slide-chair, southwards, the line was in gauge, and the spikes were all in. At the joint north of the point of the switches, the fish-plates were on and all the bolts in. At the next sleeper the line was 4 ins. out of gauge. The spikes on the left-hand chair were in, but broken or bent. On the top of the inside of this chair there was the mark of a wheel flange. There was a mark on the right-hand side at that sleeper. North of this all the chairs on the left side were marked or broken and shifted, and the same on the right side seven sleepers past the joint. The first mark of any kind on the right side was 14 ft. 8 ins. north of the points, where there were traces of a wheel flange having run over the rail. There was no occasion, in my opinion, to have any men out with a green flag during such an operation as this. There had been a slackening notice during the relaying operations, but it was withdrawn.

George Sutherland states: I am ganger in charge of a relaying gang, which has been employed in relaying the line through Dingwall station. The work was finished about a fortnight before the 18th July. On the 18th July I was, by Mr. Chisholm's orders, going to put new sleepers under the stock rails at the siding points, which rails had been put in new, but not sleepered at the time of the relaying. I opened up six sleepers on the 17th July in the afternoon, and the line remained opened up until the accident happened. During the forenoon of the 18th we put in the two sleepers at the heel of the points, and had the others in readiness to put in. The chairs in the two sleepers we put in were spiked to gauge with three spikes to each chair. On the other four sleepers the rails were to gauge, and all the spikes were in except on the left-hand chair next to the point of the switches. On this chair there was only one spike in, and that was the inside spike. The two outside spikes were partly drawn. On the north side of the points all the spikes were in, and the line was true to gauge. The fish-plates and bolts at the joint were tight, and there were no keys out. When the train was approaching the driver whistled. At that time my gang of six men were working on the place. We were not doing any work on the down line, but we were getting ready to work after the train had passed. When the driver whistled the gang cleared the line I was, myself, standing on the platform side. I saw the train approaching. It was running at 30 or 40 miles an hour, as nearly as I can guess. That is faster than trains usually run in. Steam was off, I cannot say whether the brakes were applied or not. After the saloon had passed the points she "angled across the road." The road burst and the carriages behind left the rails. All the rest of the gang were on the other side of the road. There was no flag out. If this operation had been going on between two stations I would not have had a flagman out. It would not have been necessary. I examined the road after the accident. I was with Mr. Chisholm when he gauged the line, and agree with his evidence. On the first slide-chair the inside spike was drawn nearly out, and the outside ones were bent. I did not, myself, see the wheels of the saloon leave the rails.

Driver McLennan recalled: Says that as he was approaching the gang were stooping down actually at work upon the line. He also says that on the first slide chair there was no spike in the hole outside, and only one half driven inside.

Kenneth McLennan states: I am ganger of the gang in charge of the lengths on which Dingwall station is situated. I was on the 18th July working with the relaying gang. When we heard the engine approaching four of us were working on the down line, clearing out stuff in readiness to get in the new sleepers. I did not hear any whistle that I can remember, but when we saw the engine approaching the loop points we cleared off the line, and when the engine passed the points I was standing with some others opposite to the points on the 6-ft. side. The engine was running very hard, and the other men remarked this to me. I cannot estimate the speed exactly. I did not see the saloon actually leave the rails. Before the train came the inside spike on the left-hand slide chair next to the points had been partly drawn, but the two outside ones were in the holes and not drawn. I saw the second vehicle leave the rails. It dropped off about a rail-length beyond the points. I saw it jump on to the ballast.

Duncan Fraser states: I am a permanent-way man, and am one of the relaying gang. When the engine was approaching I think I heard a whistle, and we cleared off the line. I and some others were working on the down line at the time. I was filling in at the heel of the switches, and some others were packing. The engine was running very sharp, and I passed a remark to that effect. I did not see the saloon leave the rails.

John McDonald states: I am carriage inspector, and was on duty at Dingwall on the 18th July. At the time the accident happened I was standing on the up platform nearly opposite to the points. Before the train arrived the permanent-way men were working on the down line. They, or some of them, were taking out ballast, preparing to put in sleepers. I saw the engine approaching, and I heard a whistle. I should say the speed of the engine at the points was 12 or 14 miles an hour. When the leading end of the saloon was passing off the points I saw her rock like a boat in the water, the left side first falling and the right side rising, so that the right-hand leading wheel ran over into the 6-ft. way. After the accident happened I looked at the chairs under the stock-rails. As far as I can remember one chair, the third one back from the point of the switches on the platform side, had no spikes in, but the second one had one-half driven, the one nearest to the end of the switches had two spikes in I think—one on each side of the chair. That was about 10 minutes after the accident.

Peter Duncan states: I am station-master at Dingwall, and at the time the accident happened was on the down platform. I saw the train approaching, and I should think the speed at the siding-points was about 15 miles an hour. I noticed nothing unusual in the speed. I did not actually see the saloon leave the rails. No person was injured. Immediately after the accident I looked at the road. There was only one spike in the slide chair next to the point of the switches on the left-hand rail. That spike was in the hole on the inside of the rail. It is not the same chair that is now there. It had only two holes.

Thomas Cameron states: I am foreman in the Locomotive Department, and on the 18th July I went to Dingwall in charge of the break-down squad. I arrived there at about 3 p.m. I found that nine vehicles in the second portion of the 11.25 a.m. down train had been off the rails, but that the London and North-Western saloon had been put on again before I arrived. The saloon was the leading vehicle in the train which left the rails. I made an examination of it on the spot. I gauged the wheels and they were quite correct to gauge. Two of the spring cradle bolts in the trailing bogie were bent, and the axle-box of the left trailing axle of the rear bogie was slightly damaged. A small piece was off, but I did not find it. It was of no consequence. The saloon came back to Inverness that evening on its own wheels. I also examined the other vehicles which had been off. All the wheels were in good order and correct to gauge, and there were no broken springs. They were very little damaged. Two buffer spindles in the brake-van behind the saloon were bent. This vehicle and the one behind it were buffer-locked When the saloon got to Inverness I examined it carefully again, and straightened up the two bolts, and it went south to Wolverton two days afterwards. It had two 4-wheeled bogies. The wheel-base of the bogies was 8 ft., and I think the length of the bogie was 13 ft. 4 ins. I do not know exactly the distance between the bogies, but I think it was about 19 ft. 6 ins. There was nothing that I could see in the condition of any of the vehicles to account for the accident. They are all running now.

Conclusion.

The condition of the permanent way after this accident, with the rails near the siding points from 2 ins. to 4 ins. out of gauge, and the evidence of those who saw the occurrence, especially that of Carriage Inspector John McDonald, who was in the best possible place for seeing, leave no doubt that the left rail was burst out at, or immediately north of, the siding-points near the south end of the down platform, and that upon the left wheels of the leading bogie of the London and North-Western saloon dropping inside the 4-ft. way the corresponding right wheels were tilted over the right handrail into the 6-ft. way. Whether or not the rail was burst out by this particular vehicle, or whether it was gradually forced out by the passage of the engine and the vehicles in front of the saloon, which vehicles did not themselves leave the rails, it is impossible to say, but I am inclined to think that the road must have been forced somewhat, although only slightly, out of gauge before the saloon reached the spot, and that the lurch thus caused to this heavy carriage completed the disturbance of the left rail, so that all the carriages behind the saloon wheel which reached the points were also derailed.

The evidence as to the exact condition of the line at the spot, both before and after the accident, is conflicting, no two witnesses being able to agree as to the exact number of spikes which were in the chairs under the nose of the siding switches, but it is admitted by the ganger of the relaying gang, engaged in placing six new sleepers under the stock-rails at these points, that there were four sleepers nearest to the end of the switches still to be inserted, that the whole of the ballast round these sleepers was taken out, and that some, at any rate, of the spikes had been drawn or partially drawn in readiness for the operation of removing the old sleepers. During the process of relaying the loops at Dingwall, which had been completed about a fortnight before except the renewal of the sleepers at this particular place, there had been an order that speed was to be checked, but this order had expired, and there was no reason why a driver should not enter the station at his usual speed.

In this case the driver had to run 200 yards beyond the place where the accident happened before stopping at the water column at the north end of the platform, and there was no reason whatever, if the line were in good order, why his speed should not

have been as high as the 15 miles an hour at which the station-master, an unbiassed witness, estimated it, or even higher. The speed was estimated as being much higher than this by the permanent-way staff, but it was their interest to make out that the accident was due to excessive speed, and their evidence must be taken, therefore, with some reservation, especially that of the ganger of the relaying gang, who is contradicted on several material points by his own men, and who was evidently not speaking the truth when he denied that his gang were actually at work on the down line when the train was approaching.

The conclusion I have formed, therefore, is that this slight accident was due to want of care on the part of the person in charge of the work of re-sleepering, who ought either to have deferred the removal of the spikes from the chairs under the stock-rails of the points until after the train had passed, or, having removed them, to have taken the proper steps to caution drivers to reduce speed before entering the station. The immediate responsibility rests upon ganger George Sutherland, who had at the time been on duty for six hours, but I think that Inspector Chisholm, being on the ground, should have seen that the work in progress was of such a nature that caution should have been observed. I do not believe that the speed of the train was excessive, had everything been in good order, or that the state of the rolling stock contributed in the slightest degree to the accident.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

F. A. Marindin,
Major, R.E.

APPENDIX.

Damage to Rolling Stock and Permanent-way.

Rolling Stock.

London and North-western saloon No. 180.—Two spiral spring-bolts broken, a small piece broken off one axle-box, wooden cross-bar in trailing bogie slightly split, roof-lamp glass, table-lamp chimney glass, drinking glass, quarter-light, and brake-hanger oak pieces broken.

Highland brake-van No. 32.—Two buffer-spindles bent.

Highland post-office van No. 70.—End of bogie-slide broken.

Highland third-class carriage No. 1.—One horn-plate spread out an inch.

Permanent-way.

Forty-six chairs and eight sleepers broken, and two rails slightly bent.

Printed copies of the above Report were sent to the Company on the 29th August.

HIGHLAND RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
11th November 1893.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 29th September, the result of my enquiry into the causes of the collision which occurred on the 28rd September at Dalnaspidal station on the Highland Railway.

In this case the 12.50 a.m. down goods from Perth for Inverness due to cross the 10.30 p.m. up mixed train from Inverness for Perth at Dalnaspidal at 3.25 a.m. was, at 4.43 a.m. about four minutes after its arrival, run into by the latter train, the drivers of which had overrun the up home-signal by a distance of about 155 yards.

No passengers were injured.

The driver of the leading engine of the up mixed train (there were two engines on the train) had his foot bruised.

The up mixed train consisted (upon leaving Aviemore) of two engines and tenders, each fitted with the automatic vacuum-brake, six loaded and eight empty waggons, brake van, eight coaches (counting as 10), and brake van, 24 vehicles in all coupled in the order given. In it both engines and the tender of the leading engine were damaged, one waggon destroyed, and two others damaged. Some of the wheels of both engines and tenders and of two waggons next the tender were knocked off the rails.

The down goods train consisted of two engines and tenders, each fitted with the automatic vacuum-brake, 48 loaded waggons and two brake vans. In this train the leading engine was damaged, two waggons were buffer-locked, and the leading wheels of one of them were knocked off the rails.

A list of damage to rolling stock and permanent-way is given in an appendix.

Description.

Dalnaspidal station is situated between Dalwhinnie on the north, $7\frac{3}{4}$ miles distant, and Struan on the south, 11 miles distant. Like many of the other stations on the Highland Railway (which is for the most part a single line), it is provided with a loop for passing trains about 620 yards long from point to point, with a signal cabin near each end of the loop, the signals worked from these cabins being, some of them, common to both; thus one lever in the north cabin controls the down home-signal worked from the south cabin, and another lever works a down distant-signal below that home-signal; but before either of these levers can be pulled the points at the north end of the loop must be set right for a down train and the down starting-signal lowered; consequently if an up train is improperly allowed to overrun the up home-signal, it is bound to enter the down loop line, and, if not stopped in time, to come into collision with a down train standing on that line, as happened on the present occasion. A corresponding arrangement is in force at the south cabin as regards the admission of up trains.

The up home-signal is about 13 yards north of the points at the north end of the loop, and is visible from the up distant-signal of the north cabin, a distance of about 715 yards, this distant-signal being visible for a long distance; below the home-signal and on the same post is the up distant-signal of the south cabin. There is also an inner up home-signal worked from the south cabin and placed on the down platform about the centre of the loop, to cover a siding connection. Dalnaspidal is approached from the north on a rising gradient and level portion up to the County March, $1\frac{1}{8}$ miles from the up distant-signal; for this latter distance the line falls on a gradient of 1 in 78, then on a gradient of 1 in 145 for about 380 yards, after which it rises on a gradient of 1 in 307 which extends as far as the points at the south end of the loop, when it again commences to fall southward.

The gross weight of the mixed train was about 350 tons, and of this the braked weight was about 120 tons. Had a continuous brake been applicable to the passenger carriages, the braked weight would have amounted to about 230 tons.

Evidence.

1. *William Ramsay*, nightman; two years' service, nine months nightman at Dalnaspidal.—I came on duty at 10 p.m. on the 22nd September to work till 8.30 a.m. on the 23rd. I work the signals at both cabins and the telegraph instruments. I first got the block-signal from Struan for the 12.50 a.m. down goods train at 3.39 a.m. and at 4.5 a.m. for the up train from Dalwhinnie. The points were lying right for the down train to come in. I went to the south box to receive the down train, and I lowered the home and distant signals to allow it to enter the station; it was snowing slightly at the time, and had been doing so the whole night. I was able to see the back light of the down distant-signal, which shows white when the signal is off and green when it is on. The train arrived at 4.39 a.m. while I was still in the south cabin. I put up my signals and set the points right for the up train. I then ran to the office, passed on the block-signals for the two trains to Struan and Dalwhinnie, and as I was on my way to the north cabin the up train passed me about 12 yards south of the north cabin at too fast a speed for me to have jumped upon the engine. The brakes were applied on both engines and the engines were reversed. When the collision occurred the seventh waggon from the front was about opposite to me. The brake was on the front van and I took it off. I know nothing about the rear brake van. I heard a whistle (not a brake whistle) about the up distant-signal and then a brake whistle as the first driver passed me. The night was quite still and I should have been certain to have heard any other whistle. I had last been in the north cabin to admit an up train at 3.20 a.m., and before leaving I put the signals to danger. I could not see the back light of the up distant-signal on account of snow, but I have no reason to think that the signal did not go to danger; it is a good working signal and drivers have not complained of it. Driver Simon McDonald complained to me immediately after the collision that the distant-signal had shown a clear light when he passed it. The day pointsman, a driver and guard went to look at it after the collision. After putting the signals at the north cabin at danger, I made the points for the 12.40 a.m. down passenger train which precedes the 12.50 a.m. down goods train, and should cross the up mixed train to Dalwhinnie. It passed Dalnaspidal at 3.26 a.m., and crossed an up special sheep train. I was at the south box when the 12.40 a.m. ran through the station, having been at the north box to admit the up special sheep train at 3.20 a.m. I did not go to the north box again after 3.20 a.m. till the collision. The up special sheep train left at 3.28 a.m., and at 3.39 a.m. I got "block" for the 12.50 a.m. down train. I expected to have had plenty of time to have made the road at the north box for the 10.30 p.m. up train after the arrival of the 12.50 a.m. down train. The collision actually occurred at 4.43 p.m., the up train usually taking about 20 minutes to run from Dalwhinnie. The points at the north box have to be set for a down train before the signal for a down train can be lowered at the south cabin. The only excuse driver McDonald made for over-running, was that he took the up distant-signal to be showing a clear light. The up home-signal light was burning brightly. I had taken off the up distant-signal to admit the up special sheep train.

2. *John Macdonald*, pointsman at Dalnaspidal; $2\frac{3}{8}$ years' service, five months pointsman.—I left duty at

9.26 p.m. on the 22nd September. I had been last in the north box. The up signals were drawn for the 5.10 p.m. up train from Forres. At this time I could see the light of the up distant signal, which was then working properly. I was called up in consequence of the collision and went out about 5 a.m. and at about 5.15 a.m. I went to look at the up distant-signal with the driver and guard of the up train. As I approached the signal the back light was showing pure white, and as I passed the post the arm was hanging down sufficiently to show a white light, the lever in the cabin being at this time in the position of danger. About 7.30 a.m. I saw the arm go to danger without anyone having touched it. There was snow about the signal-post when I went to look at it, about an inch in depth on the ground. There was no wind at the time. After this the snow was melting. I could see the home-signal showing a red light when I was at the distant-signal. I have not known the distant-signal to fail before.

3. *Simon McDonald*, driver; 24 years' service, 12 years driver. I signed on at Inverness at 9 p.m. on the 22nd September, to sign off about 8 a.m. at Perth. My engine was No. 37, fitted with the automatic vacuum-brake applying to both coupled wheels of the engine and to the tender wheels. I was in charge of the 10.30 p.m. mixed train from Inverness for Perth. We left the station at 10.51 p.m. and were detained at the starting-signal till 11 p.m., and were detained along the road, principally at Forres, having altered the train there, at Grantown and Aviemore, which latter station we left with a load of 24 vehicles, of which eight were passenger vehicles, counting as 10, and 14 were waggons, of which eight were empty and six loaded, the waggons being next the engine, and two of the passenger vehicles being brake-vans with a guard in each. At Newtonmore I took on a pilot-engine which had to return to Blair Atholl. It had on the vacuum-brake, but its brakes were not connected with my engine, there being no connecting pipe in front. We stopped at Dalwhinnie and left it at 4.20 p.m., knowing that we had to cross the 12.50 a.m. down train at Dalnaspidal. Nothing unusual occurred up to the County March, except that we lost time owing to wind and snow; I shut off steam, the pilot driver doing the same on getting over the summit, and we never exceeded 20 miles an hour in descending the hill, the hand-brake being kept on the tender. I first saw the Dalnaspidal up distant-signal about a quarter of a mile off; it was showing a white light, without any mixture of red, and it remained the same when I passed it, but I could not see the arm. It was snowing when I passed it. In clear weather the up home-signal is visible from the distant-signal, but I could see no light at all in it, but I saw a green light showing from what I at first thought was the home-signal, but afterwards knew was the stop signal on the platform. This I first saw about half-way between the distant and home signals. About 30 yards from the home-signal the pilot driver gave the brake-whistle, and then I realised that the signal I had seen off was not the home-signal, of which I still did not see the light but saw that the arm was at danger. By this time the engine was entering the down loop-line at a speed of about seven miles an hour. I had applied the vacuum-brake after passing the distant-signal and I reversed the engine when passing into the loop. I had not time to put on steam, but opened the sand-pipes and reduced speed slightly before the collision. No other whistle was given after the pilot engine's whistle. I was knocked off the foot-step into the 6-ft. by a bale of hay coming over the tender, a waggon having run into the back of the tender. The vacuum gauge was showing 22 inches. The spectacle of the home-signal-lamp was covered with snow and the lamp was smoking. About a quarter of a hour or 20 minutes after the collision I went back as far as the distant signal with the day pointsman and guard Martin, and found the arm down well to caution, and the light show white. If the passenger's vehicles had been next to the engine and been fitted with continuous brakes, I should have been able to stop before the collision. I think the pilot driver applied his brake about the time he whistled. If there had been no collision I should have stopped at the starting-signal at the south end of the loop, to take up another pilot engine. I have never had to report the up distant-signal for working badly.

4. *Alexander Ross*, fireman; 10½ years' service, 5½ years fireman.—I have been McDonald's mate for eight months, and was with him on September 22nd, My hours being the same as his. The speed was about 20 miles an hour on coming in sight of the Dalnaspidal distant-signal about half a mile off. It was showing a pure white light. The tender hand-brake was on. I saw the arm after passing through the bridge, and it was well down. On approaching the home-signal at a speed of eight miles an hour I could not make out the light on account of snow, and I saw the arm about 50 yards off, before I could make out the light, showing danger, the pilot driver whistling about the same time. The brakes were then fully on, and the engine was reversed before we got through the points, and we struck the other train at a speed of about five miles an hour. The leading and driving wheels of my engine and the trailing wheels of the tender were off the rails. I remained on the foot-plate and was not hurt. I at first mistook the up signal on the down platform for the up home-signal. The lamp of the up home-signal was burning dimly, and snow was on the spectacle.

5. *John McLachlan*, driver; 21 years' service, six years driver.—I commenced work at 8.30 p.m. on the 22nd September, to remain till 8 a.m. My engine was No. 31, fitted with the vacuum-brake applying to the coupled wheels and the tender wheels. I joined the 10.30 p.m. up train at Newtonmore to return with it as far as Blair Atholl, and was coupled on in front. The journey went on all right as far as the County March, where it was snowing pretty heavily. We were coming down the hill at a speed of about 25 miles an hour, with the tender-brake on, when I caught sight of the Dalnaspidal distant-signal about half a mile off, and found it showing a clear white light, no red about it. I did not see the arm. Owing to the light of the home-signal being dim and to the falling snow the signal was obscured till I was within about 100 yards of it, when I saw it showing red, the speed at that time being about 15 miles an hour, the vacuum-brake (23 inches) having been applied about the distant-signal. On finding the home-signal at danger I at once gave the brake-whistle and reversed the engine, and got this done before reaching the points, and got steam applied the reverse way. Speed was thus reduced to about five miles an hour on striking the other train. Neither I nor the fireman jumped off. I got my left foot squeezed between the engine and tender, and am still on the sick list. Some of the wheels of the engine and tender left the rails. I was not misled by the up signal on the down platform, which was showing a green light. I believe the train engine brakes were applied between the distant and home signal. It was blowing and snowing, but not very much. I did not see the lower signal light on the up home-signal post. I should have had no difficulty in stopping at the up starting-signal. Had the continuous brake been applicable to the passenger vehicles I think we could have stopped before the collision. I have not known the up distant-signal showing wrong previously. My regular fireman was away acting as driver, and I got McKenzie in his place.

6. *Duncan McKenzie*, cleaner, acting as fireman.—I was with McLachlan on the 22nd September, having come on duty at 6 a.m. on the 22nd to remain till about 6 a.m. on the 23rd. I had left work at 6 p.m., and joined the pilot engine about 9 p.m. All

went right up to the County March. On coming down the hill I applied the tender-brake. I saw the distant-signal some distance off showing a clear white light, and I saw the arm down to the post on passing under it. The vacuum-brake was applied two or three times on the way down. I did not see the home-signal, owing to snow and wind, till we were close on it, and it was then showing red. On seeing this the driver put the vacuum-brake on harder and reversed, and whistled for the brakes, and I put on the tender-brake as hard as I could. The speed on seeing the home-signal at danger was six or seven miles an hour, and was somewhat reduced on collision. I was a little bruised, but had not to go on the sick list. I only saw one light on the home-signal, and that one was very dim.

7. *John Martin*, guard; 21 years' service, 4½ years guard.—On the 22nd September I was head guard of the 10.30 p.m. up mixed train from Inverness for Perth, having come on duty at 9 p.m., to sign off about 7 a.m. on the 23rd. I was in the rear vehicle, a six-wheeled van, and on leaving Aviemore the train consisted of 24 vehicles, viz., six loaded and eight empty waggons, and 10 passenger vehicles, in which there were about 20 passengers. We left Inverness at 10.51 p.m., and after various detentions were quite an hour late leaving Dalwhinnie, having next to stop at Dalnaspidal. I saw the up distant-signal from Dalnaspidal fully a mile off, it was showing a clear white light, the speed being 16 to 18 miles an hour. I was looking for the home-signal, but saw no light, but about 20 yards off I saw the arm at danger. I had heard no whistle before this. I had felt no check to the train before seeing this. I had put my brake on on passing the County March, and could do no more. I was not prepared for the collision, but felt a sudden stop, the speed having been about eight miles an hour just before it. The only two vehicles off the road were two loaded waggons next the tender. The time of the collision was 4.45 p.m., we having left Dalwhinnie at 4.18 a.m. No one complained of being hurt. About 10 minutes past 5 I went back with the day pointsman and driver McDonald to look at the distant-signal. It was still showing a clear white light and the arm almost in the post. It was snowing a little and blowing. The spectacle in front of the home-signal was frozen up with snow, but the light was burning underneath it. Both lamps were dim through the snow. I have known nothing wrong with the up distant-signal before.

8. *William Birkens*, brakesman; 13¼ years' service, 3½ years brakesman.—I came on duty at 9 p.m. on 22nd September to remain till about 7.30 a.m. I was brakesman of the 10.30 p.m. mixed train from Inverness for Perth riding in the seventh vehicle from the rear of the train, having in front of me one first-class carriage, one horse-box, and a Great Eastern saloon, and behind me two luggage vans, Pullman car, third-class, first and third composite, and a brake-van. The journey went all right as far as the County March. I saw the Dalnaspidal up distant-signal about half a mile off showing a clear white light; I did not look at it as we passed it, at a speed of about 10 miles an hour. I did not see the home-signal at all, and the collision took me unawares, the speed being five or six miles an hour. I had heard no brake-whistle. I had put my brake hard on from where I had come in sight of the distant-signal, and I never took it off. I was not hurt by the collision. Nothing left the rails in the passenger vehicles, but some waggons were off the rails. After the accident I saw the home-signal light burning as usual, but the spectacle was covered with snow. After day-light I saw the arm of the distant-signal still down.

9. *Donald McKintosh*, driver; 24 years' service, 11⅔ years driver.—I commenced work on the 22nd September at 11 p.m. to finish at 9 a.m. on the 23rd. I was train driver of the 12.50 a.m. goods train from Perth. The train consisted of two engines and tenders, 48 waggons all loaded, and two brake-vans. We left Perth at 1.15 a.m., were detained by having to cross other trains, arrived at Dalnaspidal at 4.39 a.m., and drew up to the starting-signal, where we had been standing four or five minutes when the collision occurred. I was under my engine oiling, when hearing a brake-whistle I got out on the left side, just in time. My train was knocked back about the length of the engine and tender, the speed of the incoming train being considerable. My fireman was on the engine, but was not hurt. The driver and fireman of the other engine were both underneath their engine, the driver got out, but the fireman did not, but was not hurt. Neither of the two guards were hurt. No engine or tender wheels were knocked off the rails, but two waggons were buffer-locked and one pair of wheels was knocked off the rails. My engine was disabled, but the second engine was able to go on upon its journey. I heard the driver of the up train say they were misled by the up distant-signal showing a clear light. I paid no attention to the back lights of the up signals. I have never known the up distant-signal not to behave properly. I saw the arm of the up distant-signal off when it became daylight.

10. *Alexander Fraser*, station-master at Dalnaspidal. I have been 35 years in the service and 29 years station-master. I was in bed when the collision occurred on the 23rd September, but was called up. I went into the north signal-cabin and saw that all the levers were back in their normal position. I could not see the back light of the up distant-signal; the up home-signals were burning all right as I saw from the back lights. I then went to enquire about the passengers and heard no complaints. About 5.30 a.m. I first saw the position of the up distant-signal and saw that the arm was at caution, although the lever in the cabin was at danger; this was from the wire being tight and from the joint and guides of the rod working the arm being ice-bound, as I was told by a man who went up to it. It was freezing at about this time, and there was a quarter of an inch of snow on the ground. The arm went to danger at about 7.30 a.m., no one having touched it. I have known this signal to work badly before in frosty weather and snow. There was no snow on the ground when I went to bed about 11.40 p.m., and it was not then freezing. I did not go to the Dalwhinny side of the up home-signals. The wind was blowing from the north-west.

Conclusion.

The primary cause of this collision was the failure of the Dalnaspidal up distant-signal to return into the danger position, when the lever which works it had been put back into that position by Ramsay, the night man on duty, after admitting an up special sheep train (the up train which next preceded the up mixed train) at 3.20 a.m. Ramsay stated that he was unable to see the back light of the signal owing to snow which was falling at the time, but he had no reason to think the signal had not gone to danger, as it is a signal which works well and is not complained of by drivers.

There is, however, no doubt that when the up mixed train approached this signal, about 80 minutes after the up sheep train, it was showing a white light, and thus led the drivers of the two engines attached to the train to conclude that the home-signal would also be off. The up home-signal is in clear weather visible from the up distant-signal, but on the present occasion, owing to the falling snow and to some extent, no doubt, from as good a look-out not having been kept as would have been the case had the distant-signal been at danger, the up home-signal (as well as the up distant-signal from the south cabin, which is underneath it) was not seen to be at danger until McLachlan, the driver of the leading engine was, according to his evidence, within about 100 yards of it, and until McDonald, the driver of the train engine, alarmed by a whistle from McLachlan was, as he states, within about 30 yards of it, and that he then saw no light, but the arm of the home-signal at danger.

The evidence of McDonald's fireman and of the guard of the train, is to the effect that they did not see any light at the home-signal, but that they saw the arm at danger, the former at about 50 yards and the latter at about 20 yards distance. McLachlan's fireman (a young cleaner) did not see the home-signal till he was close under it, when it was showing a red light. The under guard or brakesman did not see the home-signal at all and was taken unawares by the collision.

Steam had been shut off at the top of the incline, and the vacuum brakes on the engines and tenders are said to have been applied at the distant-signal; the speed being estimated by McLachlan at 15 miles an hour when he saw the home-signal at danger, and by McDonald at seven miles an hour on entering the loop points, both drivers having reversed their engines when they knew that the home-signal was against them, McLachlan also applying steam the reverse way and McDonald opening the sand-valves.

The guard states that had applied his brakes at the top of the incline and thinks the speed just before collision was about eight miles an hour. The brakesman says that he applied his brake on coming in sight of the distant-signal.

The speed on collision is estimated by the drivers at about five miles an hour, which is probably not much under-estimated considering the comparatively small amount of damage done.

The down goods train, with two engines drawing it, had arrived about four to five minutes before the collision, and had stopped with the leading engine about 18 yards from the down starting-signal. The driver and fireman of the leading engine and the driver of the train engine were underneath their engines when they heard the brake-whistle, the drivers both got out before the collision, but the fireman did not, and though the engines and tenders were driven back some 50 ft. he managed to escape without injury. The fireman of the train engine was on the foot-plate and was not injured; nor were the two guards of the train.

As I before stated the primary cause of this collision was the undoubted fact (as testified by several witnesses) of the up distant-signal not having been at danger as it ought to have been when it was passed by the mixed train. This no doubt led the drivers not to keep so good a look out for the up home-signal as they ought to have done, and I cannot therefore hold them blameless for not approaching this signal at a more cautious speed until they saw what light it was showing; and I have difficulty in accepting the statement of driver McDonald, that he was misled by seeing a green light in a signal nearly 400 yards south of the home-signal and mistaking it for the light of that signal.

With the exception of McKenzie, McLachlan's fireman, the hours of the servants of the Company in charge of the mixed train were not unduly long, none of them having been on duty more than about eight hours when the collision occurred, out of a booked time in no instance exceeding 11½ hours.

In the case, however, of McKenzie, a cleaner acting as fireman, he had been at work from 6 a.m. to 6 p.m. on the 22nd September, and at 9 p.m. was called upon to act as fireman with McLachlan, his regular fireman being away acting as driver of another engine. McKenzie had thus been on duty for 19¾ hours, with an interval of only three hours' rest during that time, and had there been no collision would not have been relieved for at least another 1½ hours, this having been in my opinion a most improper arrangement.

With regard to the up distant-signal at Dalnaspidal not having gone to danger when Ramsay the nightman in charge put back the lever, he ought—as he failed to see the back light on account of the falling snow—to have taken means to assure himself that it had really gone to danger by going towards it till he could see it. He would have had plenty of time to do this after the departure of the special sheep train at about

3.30 a.m., and he is to be blamed for not having done so. The reason of the failure of the distant-signal to go to danger was owing to falling snow having frozen and interfered with the free action of the balance weight, as when the snow melted in the morning the arm is said to have gone to danger without being touched. Ramsay had come on duty at 10 p.m. on the 22nd September for a spell of 10½ hours, and had thus been on duty about 6¾ hours at the time of the collision.

This collision would not have occurred had the signal arrangements at Dalnaspidal been differently arranged from what they are. As it is, the signals to admit a down train into the down loop line cannot be lowered until the points at the north end of the loop are set and locked right for that train to leave the loop, the same arrangement being made as regards up trains. Consequently if, as in this case, an up train overruns the home-signal it is bound to run into the down loop line, and, if it is not stopped soon enough, to run into a train standing on that line. Had the points at the north end of the loop been left lying in the normal position for the up loop line until they had to be shifted to allow the down train to start, this collision would not have occurred, as the up train would have run in on the up loop line where there was no obstruction. I would therefore suggest to the Highland Company the expediency of altering their signal arrangements at this station and at any other similarly situated, in the sense above indicated, an alteration which would bring them into harmony with modern practice in this respect.

The circumstances connected with this collision will no doubt be cited as an instance of the advantage of making up mixed trains with the waggons in front of the passenger carriages, as the only damage sustained was by the three waggons next the train engine, whereas had the passenger carriages been next the train engine these would have received the brunt of the collision. It must, however, be borne in mind that had the carriages been next the train engine and (as would have been the case) fitted with continuous brakes applicable by the driver, the braked weight of the train would have been increased from about 120 to 230 tons out of a total weight of about 350 tons, or have been nearly doubled, and under these circumstances the train would probably have been stopped in time to avoid the collision altogether, a more desirable result to obtain than that of simply reducing the amount of damage sustained after the occurrence of the collision.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

C. S. Hutchinson,
Major-General, R.E.

APPENDIX.

Damage to Rolling Stock.

Engine No. 31, leading engine of 10.30 p.m., 22nd.—Smoke-box front and door damaged; outside frame bent; buffer-beam and plates, buffers, and buffer-plate stay broken; one front cylinder-cover broken: one leading-spring buckle shifted, and one leading-spring back plate broken; life-guards broken; left-hand outside frame bent.

Tender No. 31.—Hole in tank-bottom plate; back buffer-beam and plates broken; back transom beam broken; back tool-box broken; three hornplate cheek-blocks broken; two axle-boxes broken; front buffer-beam and plate broken; front centre buffer broken; front platform-plate bent; two hornplate stays broken; four brake-hangers broken; two brake crossbars bent; four brake-rods broken.

Engine No. 37, train engine of 10.30 p.m., 22nd.—Smoke-box front, door, and side covering-plate damaged; left-hand front-cylinder cover, and shield broken; front buffer-beam, two plates and buffers broken; right-hand leading-spring top plate broken; front life-guards broken.

Tender No. 37.—Back of tank and tool-box damaged; back buffers broken; front centre buffer broken; front drawbar bent; one brake-hanger cross-shaft bent; vacuum-pipe at back of tender broken.

Engine No. 67, leading engine of 12.50 a.m., 23rd.—Front buffer-beam and plates broken: buffers broken; front platform-plate broken; outside frame bent; driving and trailing springs flattened; bogie front cross-stay broken; one spring-buckle shifted; one spring eye-bolt broken; bogie centre and pin broken; life-guards broken.

Tender No 67.—One back-buffer casing broken; one front-buffer casing broken.

Engine and tender No. 77.—No damage received. Second engine on 12.50 a.m., 23rd.

Highland Railway cattle-waggon, No. 1,301.—Two end posts and one corner post broken; two buffers broken; end ling damaged.

Highland Railway cattle-waggon, No. 1,802.—Two buffer spindles and sockets broken.

Highland Railway waggon, No. 600, and North British waggon, No. 8,573.—Totally destroyed.

Damage to Permanent-Way.

Eight bull-headed rails, 30 ft. long, bent and twisted; 18 sleepers cut and split; 18 chairs, weighing 37¼ lbs., broken; 30 fish-bolts broken and bent; 114 spikes broken and bent.

Printed copies of the above Report were sent to the Company on the 29th November.

LANCASHIRE AND YORKSHIRE RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
18th September 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 31st August, the result of my enquiry into the collision that occurred on the 26th idem outside the Exchange station, Liverpool, on the Lancashire and Yorkshire Railway.

On this occasion as the Lancashire and Yorkshire 8.30 a.m. train from Ormskirk to Liverpool was standing at the home-signal of B signal-cabin near the Exchange station, it was run into in rear by a light engine belonging to the Midland Railway Company, which was proceeding to the station for the purpose of working the 9.35 a.m. train from Liverpool to the North. The collision occurred at 9.8 a.m.

Fifty passengers are reported to have complained of injuries, none of which were very serious.

The train consisted of engine, tender, and 11 coaches, including two third-class brakes, one at each end of the train, and it was fitted throughout with automatic vacuum brake. For details of the damage done to the train, which was considerable, *see* Appendix. Fortunately the two guards (one of them belonging to the Midland Railway) who were riding in the rear van had alighted before the collision took place. Had it been otherwise these men, judging from the damage to the rear brake, would have suffered severely.

The Midland engine was a four-wheeled coupled bogie passenger engine, with a six-wheeled tender. It was fitted with a steam-brake applying to all the wheels of engine and tender, except the bogie wheels, and with the automatic vacuum-brake apparatus for use with a train, both brakes being applied by the movement of one lever.

It was running tender first, and no damage was done to it.

Description.

B signal-cabin, at the outer home-signal of which the train was standing, is situated a short distance north of the Exchange station. The outer home-signal is 153 yards north of the cabin, and 362 yards outside this is the starting-signal of the Exchange junction signal-cabin, the total distance between the two cabins being 795 yards. There are four lines of rails between the two cabins, viz., the west up and down main lines, and the east up and down main lines. The train which was run into was standing on the east down main line, and this line alone need be taken into consideration. The distant-signal for B cabin is situated on the same post as and below the starting-signal of the Exchange junction-cabin, which, as already stated, is 362 yards from the home-signal of B cabin. As this distance is short, there is an instruction to the signalman in Exchange junction-cabin to the effect that whenever B cabin distant-signal is at danger, the Exchange junction distant-signal is also to be kept at danger, though the home and starting signals pertaining to the Exchange junction-cabin may have been lowered.

Between the two signal-cabins referred to the line crosses Chadwick Street by an iron girder under-bridge, which is situated 114 yards north of the down home-signal of B cabin. Proceeding from the Exchange junction-cabin towards Liverpool there is a rising gradient nearly up to the Chadwick Street bridge, the inclination being as follows, viz., for about 150 yards 1 in 363, for 113 yards 1 in 141, and for 220 yards (up to the north end of the bridge) 1 in 231. The line then falls at an inclination of 1 in 3,850 for 550 yards up to the entrance into the station.

The tail of the train which was damaged was a few yards (estimated by the guard as 15) north of the Chadwick Street bridge, and was as nearly as possible at the point where the rising gradient of 1 in 231 changes to a falling gradient of 1 in 3,850. The engine which collided with it, was therefore travelling on a rising gradient up to the moment of the collision.

Absolute block is in force between the two signal-cabins referred to.

Evidence.

Patrick McLinden, relief signalman, in the service of the Lancashire and Yorkshire Railway Company, said: I have been in the Company's service 11 years, and a signalman eight years, and on the 26th ultimo I came on duty at 6 a.m. at Exchange station "B" box to work for eight hours. The Ormskirk passenger

train was running about one minute late. It was "Offered" to me at 9.2, "Accepted" 9.2, "On line" 9.5, and it arrived at my home-signal at 9.6. I "Offered" it to the box in advance at 9.2, and it was not accepted until 9.7, and so my home-signal remained at danger, and the train pulled up at it. The 9.5 a.m. the Liverpool toYork train was "Offered" to me at 9.6, "Accepted" 9.6, "On line" 9.7, and "Passed" at 9.8. I have an entry in my train record book to the effect that the collision occurred at about 9.8. The booking boy called my attention to the collision at 9.8, and I made a note of it. I heard nothing of the collision until the train-booker drew my attention to it. I did not see the light engine. The Liverpool to Yorkshire train was just passing my cabin at the time the boy drew my attention to the collision. The Ormskirk train, after the collision, went on at 9.16 a.m., and the Midland engine stood at the signal. I had just lowered my signal for the Ormskirk train when the collision occurred. The Ormskirk train was delayed at my signal waiting for the platform, at which it had to arrive, being cleared. My home-signal is slotted with "A" cabin, and we have to wait for the slot to come off before taking the signal off. My outer home-signal is preceded by the inner home-signal. A train of empties passed me from Liverpool on the east line at 9.4, "Offered" at 9.2, "Accepted" 9.2, "On line" 9.3, "Passed" 9.4, and "Cleared" from Exchange junction box at 9.5 a.m. The Ormskirk train was standing at my signal about two minutes before the collision occurred. I cannot say whether or not it had started when the collision took place. I did not get the light engine "Offered" to me from Exchange junction, and I have no entry in the book. Absolute block is worked between the two boxes, and I know of no departure from it.

Richard Witter, signalman in the Lancashire and Yorkshire Railway's service, said: I have been in the service of the Lancashire and Yorkshire Railway Company 37 years, and have been a signalman 31 years, and at Exchange junction box since it was opened, seven years ago. I have a boy in the cabin to book the trains. On 26th of August I came on duty at 6 a.m. for an eight hours shift. Ormskirk train was "Offered" to me from Sandhills No. 1 at 8.57, "Accepted" 8.57, "On line" 8.59, and "Passed" 9.4. "Accepted" in advance at 9.2, and "Cleared" at 9.16 am. Engine "Offered" to me from Sandhills No. 1 at 9.4, "Accepted" 9.4, and "On line" at 9.4. I have no recollection of passing the engine on to "B" box. There is an entry in the book that the light engine passed my cabin at 9.16, and that it was "Accepted" in advance at 9.6, and "Cleared" at 9.21, but the booking is faulty. All this booking has been done by the boy. I did not look at the book at all, and so was not misled by the entries. I have no recollection of putting my signals on behind the Ormskirk train, nor of lowering them for the light engine. I do not know whether the booking for the engine is correct is not. The boy books it himself. I am not in the habit of giving the boy any instructions after he has learnt the bell-signals. I saw the Ormskirk train pass, and had signals off for it. I did not see it standing at the box in advance; there is not a very good view from Exchange junction box. I generally give "Line clear" for a train when it is past my box, and proceeding on its forward journey at its usual rate of speed. I had the home-signal and advance signal off for the engine, but my distant-signal was on because the instruction is that it shall not be lowered until "B" box distant is off. The distant for "B" box was not off on this occasion, so my distant was on. I had not lowered my distant signal for the Ormskirk train. The Midland engine passed me at the usual rate of speed. I do not think it would be going at more than 10 miles per hour. The first I heard of the collision was the signalman in the box in advance calling my attention to it on the telephone. I replied to him that "I thought it was clear for the Midland engine." Absolute block is worked between the boxes, and we stick to this rule. The 9.5 a.m. Liverpool to York was "Offered" at 9.6, "Accepted and on line" at 9.6, and "Passed" me at 9.7.

William Walker, train-booker at Exchange junction box, Liverpool, said: I have been in the service six weeks, in "A" box three weeks, and in Exchange junction box three weeks. On the 26th ultimo I came on duty at 7.30 a.m., to work 12 hours. I do not know the bells very well. I remember booking the Ormskirk train. I made all these entries myself. I listen to the bells and book them without waiting for the signalman's orders, but when I do not know I ask him, and he tells me. I booked the Ormskirk train all by myself. I looked at the clock for the times. I heard the signals on the bells for the light-engine. I booked the empty carriages from Liverpool on the wrong page. I altered them and made the correct entries on the proper place, and the times are correct. I have left one entry out in the column for the engine "Accepted in advance." I have missed the "1" out; it should read 9.16, not 9.6. I did not hear the bells ring for this engine after the accident. I do not know whether the signalman put the signals on after the passage of the east line train or not. I saw the engine pass, but made no remark to the signalman, and he made no remark to me. I made these entries in the book on my own responsibility.

Patrick McLinden, relief signalman, recalled, said: After the collision had occurred, and the Ormskirk train gone forward, I gave the "Obstruction" signal to Exchange junction for the Midland engine. I did not receive any bell-signal for the engine. Afterwards I gave "Clear" for the Midland engine at 9.22. I gave the "Obstruction" signal at 9.16.

Thomas Henry Sawyer, passenger guard in the service of the Lancashire and Yorkshire Railway Company, said: I have been in the service 16 years, and a guard nine years. I came on duty at 7.45 a.m., having finished duty at 5.40 p.m. the day previous. I was guard of the 8.30 a.m. passenger train, Ormskirk to Liverpool. I left Ormskirk at 8.30 a.m. The train was composed of 11 carriages, viz., five composites, three thirds, and three half van thirds or brake-carriages. It was formed with a half van at each end. I was the only guard of the train, and was riding in the last van. We were running to time up to Sandhills. I saw the signals off passing Sandhills; the distant-signals for Exchange junction and "B" boxes were on, and we stopped at "B" box home-signal, and we had been standing about half a minute when I saw the engine coming past the Exchange junction box, opposite the down home-signal on the east side. The tail of my train was just about 15 yards on the Sandhills side of the bridge. I got out of my van and ran towards the Midland engine. I blew my whistle and shouted to the driver as he passed me. I was standing when the engine passed me, and the driver was stooping down; he was not looking ahead, and I do not think he saw the train or noticed me. I ran down about 80 yards from the tail of my train. The fireman was stooping down too, doing something at the fire-box. I estimated the speed of the engine at about 20 or 25 miles per hour, and I am quite positive that the men were stooping down with their backs towards the train. I was under the impression at the time that there was another man on the engine. The steam appeared to me to be on. I came back to my train, and as I passed the Midland engine I said to the driver, "If you had been looking out as you ought to have been, this would not have occurred," and he did not reply. I then noticed that the passengers were getting out, and that a train was coming from Liverpool on the up line. My train was broken loose in five places, and the vacuum con-

nections uncoupled. The shock was a severe one, and I am quite certain a train was coming out from Liverpool at the time. I warned the passengers off the line, and the driver of the outgoing train slackened speed in obedience to my signal as he passed the place of collision. There was a Midland guard travelling in my van. I was taking him down to work a Midland passenger train. When I saw the engine and jumped out I left him in the van; he got out after me. I coupled my train up again, got the passengers back into it, and went on to the station. I spoke to the Midland driver again at the station. I told him he was not looking out as he ought to have been, or he would have seen me. He replied, I was not at his side, that I was at the fireman's side. I said, "Yes; I was in the 6-ft. side." I said, "You "were both stooping down, and appeared to have "steam on." He said he had not steam on; that he had shut it off at Exchange junction, and he was not stooping down, and I then said, "How was it you did not see the train?" and he replied he saw it six carriage lengths away. I said, "That is impossible, or you would have stopped." I was running as hard as I could to meet the engine. I was standing when the engine passed me. I was about a yard away from him. The driver was on the east side away from me, and the fireman on the west side, and they were both looking towards the fire-box. My impression is that the third man was standing on the tender; he had a serge suit on. I am not quite sure that there was a third man on the engine.

James Yale, passenger guard, in the service of the Midland Railway Company, said: I have been in the service 20 years, and a passenger guard 11 years. I came passenger from Kirkdale to take duty at Liverpool at 9.5 a.m. to work the 9.35 a.m. from Liverpool to Carlisle. I worked the same train the previous day and finished duty at 7.5 p.m. I joined the 8.30 a.m. Lancashire and Yorkshire passenger train Ormskirk to Liverpool at Kirkdale. I did not ask permission of the Lancashire and Yorkshire guard to travel with him in the van and he did not object. The Lancashire and Yorkshire train was stopped at the home-signal for "B" box, and I should think it had been standing there about a minute before I noticed an engine coming along. I drew the Lancashire and Yorkshire guard's attention to it. I do not think he had seen it. I said to him "The "signal is off and an engine coming." I did not notice whether the signal had been put to danger or not. I did not notice it before. The Lancashire and Yorkshire guard got out first and I followed him, after I had got out and gone a few yards I noticed I had left the van door open. I returned and pushed it to and then went after the Lancashire and Yorkshire guard. As near as I can point out the tail of the Lancashire and Yorkshire train was a yard or two on the Sandhills side of the bridge. I did not succeed in attracting the Midland driver's attention. I was about 15 yards behind the Lancashire and Yorkshire guard. When the engine passed me I did not see either the driver or fireman. I looked at the engine but did not see them. As they passed me I tried to attract their attention but did not succeed in doing so. I saw no third person on the engine. The engine passed me at a speed of about 8 or 10 miles per hour, steam off. I cannot say anything as to the brakes. After the collision the Lancashire and Yorkshire guard asked me to go to the station for assistance and I did so. I never spoke to the Midland driver about the collision. I noticed the signal at Exchange junction-box off before I saw the engine. The Lancashire and Yorkshire guard did the best he could to prevent the collision. I heard the Lancashire and Yorkshire guard say something to the Midland driver but cannot say what it was. I cannot say whether the engine brake was on or not.

Henry Hingley, engine driver, in the service of the Midland Railway Company said: I have been 23 years in the Midland Company's service, passed as a driver for 18 years, and a regular driver 13 years. On the 26th ultimo I came on duty at Sandhills at 8.35 a.m., and booked off at 8.20 p.m. I came off duty the night previous about 5.50 p.m. I came with my engine on to the down east main line at Sandhills No. 3 box at 9.8 a.m. as near as I can say. Sandhills No. 1 starting-signal was at danger, and I stopped at it barely a minute when it was lowered but the distant-signal below it remained on. On sighting Exchange junction-box, outer and inner home-signals, and starting-signal, they were all off. The distant-signal, below the starting-signal for Exchange junction, was at danger. I was running tender first, and after passing Exchange junction-cabin I looked ahead over the hand-rail on the left-hand side several times, and I did not see anything in front of me. I saw the train in front of me when I was about 40 yards away from it. Just before I saw the train I had turned my head to look at something; I had been looking before, and when I looked the next time I saw the train. I might have seen the train a little further off if I had been looking. We were then running about nine miles per hour; steam was shut off at Exchange junction. As soon as I saw the train I put the brake on. I was expecting to stop at the signal. I cannot say in how many yards I can pull my engine up in going at a speed of nine miles per hour. I was going about six miles per hour when we ran into the train. My engine is a four-wheeled coupled bogie engine, bogie leading, with a six-wheeled tender, with steam-brake applying to all the wheels of the engine and tender except the bogie wheels. I heard a whistle and shout just before I struck the train. When I got on to the ground, about half a minute after the collision, I saw the Lancashire and Yorkshire guard near the tender. The tail of the train was a little way on the bridge as near as I can say. I did not see the Lancashire and Yorkshire guard before the collision. I do not know whether I passed him or not. I heard a whistle, but did not see him. I asked him what he was doing standing there with that starting-signal off, and he said, "Yes, he knew it was off," and he asked me why I had not looked when I came to the train, and why I came into the train. I told him I should not have come into the train if I could have helped it. The Lancashire and Yorkshire guard came to me again in the station for my name, &c., and I asked him how long he had been standing there with the starting-signal for Exchange junction off, and he said, "Two or three minutes," and I asked him why he was not at the other side of the signal to protect his train. I was prepared to stop at the home-signal. When we saw the train the fireman was doing something on the foot-plate; he was not looking ahead. The Lancashire and Yorkshire guard started the conversation first; he wanted to know why we had run into the train or something to that effect, and why I was not keeping a better look out, and I asked him why he was standing there with the signals off behind him. There was only myself and fireman on the engine. There was no train obstructing my view. A train passed me a little after the collision. After the collision I saw the Midland guard a little way down the Lancashire and Yorkshire train with his basket in his hand.

John James Mather, fireman, in the service of the Midland Railway Company, said: I have been in the Midland Company's service six years, and a fireman 5½ years. I was fireman to driver Hingley, and my hours of duty were the same as his. I have been firing for driver Hingley about five months. When we approached Exchange junction signal-box, the home-signal and the starting-signal were off and the distant-signal below the starting-signal was at danger. After seeing the signals off I commenced to clean up the foot-plate. I was not looking ahead. I did not see the train until I noticed my mate put the brake on. I saw my driver talking to the Lancashire and Yorkshire guard after the collision. I cannot say what the conversation was. I did not see the guard before the collision nor did I hear him whistle. I

saw the Midland guard going to the station. As near as I can think the tail of the Ormskirk train was at the Sandhills end of the girder bridge.

John Marsh, engine-driver, in the Lanchashire and Yorkshire Railway Company's service, said: I have been in the service 34 years, and a driver 27 years; and on August 26th I came on duty at 7.10 a.m., and was driving the 8.30 a.m. Ormskirk to Liverpool passenger train. After leaving Sandhills the distant signal for Exchange junction was on, the home-signal off, the advance-signal off, the distant and home signal for "B" box were on, and I stopped at the home-signal. I pulled up about two tank-engine lengths from the signal and stood there two or three minutes as near as I can say, when the signal in advance came off. I was anticipating the home-signal coming off. I gave the engine steam immediately it did so; and I had just got on the move when we were run into after having gone about a yard and a half. I was knocked against the reversing-wheel and having hold of the regulator pulled it over in lurching. I looked round and saw we had broken loose between the front van and the first carriage, and that the van had been on top of the engine buffers, but had dropped off again. We afterwards coupled up and took the train into the station. I did not notice the signals in rear of my train.

Conclusion.

The evidence makes it clear that this collision was due to an unaccountable blunder made by signalman Witter in the Exchange junction-cabin.

The Lancashire and Yorkshire train from Ormskirk passed his signal-cabin on the east main line in the ordinary course at 9.4 a.m., all his signals being "off" for it, except his distant-signal, which, according to rule, was kept at danger, in consequence of the distant-signal for B cabin being also at danger. As the train was passing, *i.e.*, at 9.4 a.m., the Midland light-engine, which was travelling on the same line of rails, was offered to Witter from Sandhills No. 1 cabin, and was at once accepted by him. As soon as the train had passed his cabin it was Witters' duty to put the home and starting signals to danger behind it, and not to lower them again for the light engine to pass until the latter had been offered to and accepted by the signalman in B cabin. Witter is unable to say whether he put these signals to danger behind the train, and whether he offered the engine to B cabin, and I have little doubt that he performed neither of these acts. At any rate, the driver of the Midland engine, which arrived at the cabin about three minutes behind the train, found the home and starting signals off, and understood thereby that he had a clear run up to the home-signal of B box, at which the position of the arms of the distant-signals warned him he might have to stop.

In the meantime the Ormskirk train was stopped at the home-signal of B cabin, while a platform was being cleared for it in the Exchange station, and the train, while so standing should have been protected by signals in rear, *i.e.*, the home and starting signals of the Exchange junction-cabin, had these been placed to and kept at danger by Witter. But as just stated, the signals were off, and after passing them, the driver of the light-engine found himself unexpectedly approaching the rear of the train. He says he was 40 yards away when he first saw the train, and was running at 8 to 10 miles an hour. He at once applied his steam-brake with full force, but before he could stop his engine he struck the guards' compartment at the tail of the train with considerable violence. Fortunately, the train had begun to move forward, the signal having just at that moment been lowered for it, and the shock of the collision was thereby reduced. From the above facts it will be seen that the collision was due to signalman Witter's omission to place his signals at danger after the train had passed his cabin, and so to keep them until he received "Line clear" from B cabin for the train, and until he had received the usual intimation on the block telegraph instruments that the light-engine might proceed forward. Witter has been for 31 years a signalman in the Lancashire and Yorkshire Railway Company's service, out of a total service of 37 years, and bears the highest character. It is therefore, with considerable regret, that I am compelled to record my opinion that this collision was brought about by his failure on this occasion to carry out the ordinary rules of train-signalling and block-working. He had been on duty for three hours eight minutes, when the collision occurred.

But, although this man must be held chiefly responsible, I am unable to regard the driver and fireman of the Midland railway light-engine as altogether blameless in the matter.

Had driver Hingley been keeping a proper look, he would undoubtedly have seen the train in front of him in sufficient time to have stopped his engine before striking the train. It is true that he found the signals at Exchange junction off, but, both he and his fireman seem to have forgotten the necessity (pointed out in Rule 277) of not trusting to signals alone, and of being at all times cautious and vigilant. They were running tender first, and appear to have been attending to their engine, instead of looking ahead. Although the driver says that he was running at nine miles an hour

when he first saw the train, this is hardly in accordance with the fact that he travelled from Sandhills No. 1 cabin to the point of collision, a distance of about 2,116 yards, in four minutes. But, whatever the speed may have been, the drivers' duty was to keep a look out ahead, or to direct his fireman to do so, and this is the more necessary when approaching a large terminal station. And inasmuch as they neglected this reasonable precaution, driver Hingley and to a less degree fireman Mather must be held to have contributed to the mishap. They had been on duty 33 minutes.

A suggestion was made by guard Sawyer of the Lancashire and Yorkshire train, that there was a third person on the Midland engine, but no corroboration of this statement is forthcoming, and it seems probable that Sawyer was mistaken on this point.

In conclusion, it is my duty to draw attention to the misleading entries made by booking-boy William Walker concerning the light-engine in the train-book kept in the Exchange junction signal-cabin. Although these errors in no way contributed to the collision, the matter is of importance, as a train-book if not accurate is worse than useless, and might lead a signalman into some dangerous mistake. Walker is an intelligent lad, 15½ years old, has been six weeks in the Company's service, and he had been on duty 1 hour 38 minutes when the collision occurred. It must be acknowledged in fairness to him, that signalman Witter seems to have left the lad to act on his own responsibility, instead of instructing him in his duties.

I have, &c.,

H. A. Yorke,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Damage to Engine and Carriages.

Lancashire and Yorkshire engine No. 93.—Right-hand tender-buffer broken off; left-hand tender-buffer damaged.

Lancashire and Yorkshire third van 594.—One screw shackle-link broken; one screw shackle-link bent; two buffer-rods bent; one headstock split; one axle-box broken.

Lancashire and Yorkshire composite 147.—Body moved; bottom quarter-panel split; one buffer-rod badly bent; one buffer-rubber burst.

Lancashire and Yorkshire third 1,321.—Body moved.

Lancashire and Yorkshire composite 369.—One buffer-rod badly bent.

Lancashire and Yorkshire composite 365.—Screw shackle-link broken.

Lancashire and Yorkshire third 2,130.—One end-bar split; bottom side split; body moved; headstock split; two axle-boxes (oil) broken.

Lancashire and Yorkshire third 2,109.—One bottom side split; two end-bars split; brake centre-stop bent; one lamp-iron bent; body moved; two axle-boxes broken; one buffer-arm bent.

Lancashire and Yorkshire third van 1,943.—Body moved; two headstocks broken; four buffer-rods bent; bottom side split; foot-board split; one end-bar split full length; bottom quarter-panel split; waist-panel split; two top quarter-panels and two door facier-panels split; foot-board split; bottom quarter-panel split; one projection-light broken; one door-panel split across; one bottom side split; one door casing-board split across; three floor-boards broken: six axle-boxes (oil) broken; centre brake-stop bent; two sole bars and one diagonal split.

Printed copies of the above Report were sent to the Lancashire and Yorkshire and the Midland Railway Companies on the 28th September.

LANCASHIRE AND YORKSHIRE RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
11th October 1893.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 7th ultimo, the result of my enquiry into the circumstances connected with the fatal accident which occurred on the 28th August at Rayner's Lane level-crossing near Ashton-under-Lyne on the Manchester and Stalybridge line of the Lancashire and Yorkshire Railway.

In this case as a man named George Hiley, said to be 83 years of age and deaf, was attempting to cross the line at this level crossing, he was knocked down probably by the engine of a passing train—most likely the Lancashire and Yorkshire Company's

11.55 a.m. passenger train from Stalybridge for Manchester—and received such fatal injuries that he shortly afterwards died.

Description.

Rayner's Lane level-crossing is not that of a public road, but is one which is largely used by the public both in vehicles and on foot. The gates are left unlocked and are not attended to by any one, the Company contending that as it is not a public road level-crossing they are under no obligation to keep a gatekeeper there, and that if they did so they would be involved in liability in case of an accident occurring. The crossing is fairly well seen when approached by trains from Manchester, but not so well by those coming from Ashton. The road falls towards the railway on both sides, and a person suddenly coming from the road on to the railway would be very little seen by an approaching driver until he was nearly foul of the rails.

The crossing is stated to be a good deal used, but no records were forthcoming of the numbers of vehicles and foot passengers passing over it. The number of trains on the line is considerable.

Owing to the unprotected state of the crossing it has, as was to be expected, been the scene of several fatal accidents, and the Town Clerk of Ashton has supplied me with a list (*see* Appendix) of those which have occurred within the last 15 years and which amount to six in all, including the recent one. From this list it appears that the first accident was to a woman in a cart, the second to a child in a perambulator, and the last four to foot passengers.

In the session of 1891, the Company obtained powers to abolish the crossing upon the substitution for it of an overbridge at a place about 350 yards west of the crossing. The road which is to give access from Rayner's Lane to the bridge approach on the north side of the railway has not been as yet constructed, and its construction is stated to depend upon the action of the trustees of Lord Stamford, for the development of whose property the road is to be made, the prospect of its immediate construction being I fear remote. On the part of the Company it is stated that they are quite prepared to construct the bridge when they see a likelihood of the road being made, without which it would be practically useless.

Evidence.

1. *The Town Clerk of Ashton.*—I hand in a list of fatal accidents which have taken place at this crossing since 1878. In the view of the Ashton Corporation the Rayner's Lane crossing is a public right of way both for vehicle and foot-passengers, and the Corporation would have no power to close the road for vehicular traffic, &c. were a footbridge for passengers provided, except under the powers of the "Lancashire and Yorkshire Act of 1891." The road is maintained by Lord Stamford's trustees, or his farm tenants. There would be no power to lock the gates and place the keys in the hands of persons using the crossing. I am not aware of any immediate prospect of the new road being made in connection with the erection of the proposed bridge. The Corporation are strongly of opinion that something should be done to safeguard the crossing, but feel that the Railway Company are placed in a difficulty with regard to it. The Corporation can bring no pressure other than moral on Lord Stamford's trustees for expediting the construction of the new road. I have no particular knowledge of the recent accident at the crossing. Mr. Henry Hall, solicitor, Ashton-under-Lyne, is the agent for the trustees of Lord Stamford's estate.

2. *William Milward*, foreman platelayer over the length between Ashton station and three-quarters of a mile on the Manchester side of it.—I have been 12 months on this length. I was on duty on 28th August, working from 6 a.m. to 5.30 p.m. I heard of the accident when at dinner at Ashton about 12.20 p.m. I went up at once to Rayner's Lane crossing. The body had been removed, but one of my gang, John Marten, told me that he had helped to pick it up from a post 35 yards on the Manchester side of the crossing in the 4-ft. of the line to Manchester. The man was fatally injured. There was no doubt but that he must have been struck by the engine of an up train. From what I heard there were no marks on the engine of either of the up trains, which followed each other at intervals of about three or four minutes. I know nothing of any previous accidents at this crossing, having come to the length only as foreman platelayer. The driver of the Lancashire and Yorkshire 11.59 a.m. train from Ashton was the only driver examined at the inquest, and he said he saw nothing whatever of the deceased. The day was bright and clear. The whole of my gang were away at dinner at the time of the accident. There were marks in the ballast, commencing about two yards on the Manchester side of the crossing, and continuing to where the body was found.

3. *Joseph Davis*, porter at Ashton; five years' service.—My hours of duty on 28th August were from 5 a.m. to 4 p.m. I was on duty when the signalman in the west cabin called me up and told me that a man had been knocked down at Rayner's Lane crossing, as he had heard by telephone from the junction-cabin. I went up to the place at once, and on my way overtook the 11.53 a.m. London and North-Western train from Manchester to York, which was setting back towards the crossing. I got on to the engine and rode back to the spot and helped to pick the man up, who looked as if he was dead. The body was between the left rail and the embankment of the up line, and about 30 yards on the Manchester side of the crossing. He was bruised on the left side of his head, on his left leg, and right arm. I thought he had been crossing from the south to the north side of the line. I heard afterwards that he was a gardener. The driver of the down train said he had passed the

driver of the Lancashire and Yorkshire up train near Park nearly five miles from Ashton. He said he had seen the body when within about 30 yards of it, lying on the side of the line. I was not examined at the inquest. The deceased was said to be a native of the place, and deaf. He was, I believe, 83 years of age.

4. *John Ellison*, driver in the Lancashire and Yorkshire Company's service; 30 years' service, 18 years driver.—I commenced work on August 28th at 8 a.m. to sign off at 7.15 p.m. I started from Stalybridge with the 11.55 a.m. train for Manchester, and left Ashton at 12.2 p.m. I was driving tender engine No. 983, an eight-wheeled engine with a four-wheeled leading bogie, running chimney in front, my place being on the left side of the foot-plate. I left Stalybridge punctually and was running at a speed of about 25 miles an hour when approaching Rayner's crossing. When approaching and passing the crossing I saw nothing of anyone coming towards or crossing the line, though I was looking ahead. The fireman was firing at the time. I felt no shock as we passed the crossing. I heard nothing of the accident till arriving at the shed at night. I had looked round the engine at 1.30 p.m. and had seen no marks of anyone having been struck. At the shed I received a telegram directing a minute inspection of the engine, but still no marks could be found. I am under the impression that it could not have been my engine which struck the man.

5. *John Bottomley*, driver, London and North-Western Railway Company's service; 21 years' service, 10 years driver.—I signed on at 9.30 a.m. on 28th August, to sign off at 8.30 p.m. I was driver of the 10.30 a.m. train from Leeds for Blackpool. My engine was No. 1272, a tender engine, six wheels coupled, running engine first. My place was on the left side of the foot-plate. We left Ashton at 11.56 a.m. to stop next at Manchester. I know the crossing where the man was killed. On approaching and passing the crossing at a speed of from 10 to 12 miles an hour I was looking ahead and saw nothing whatever of anyone passing. I found no marks on the engine afterwards. My fireman says he saw nothing, though he was also looking ahead.

6. *William Cunliffe*, driver, London and North-Western Company's service; 31 years' service, 25 years driver.—I signed on duty at 10 a.m. on 28th August to sign off at 9 p.m. I was driver of the York express, the 11 a.m. train from Liverpool. I had left Manchester two minutes late at 11.55 p.m. with engine 446, a four-wheeled coupled six-wheeled engine and tender, running engine first, and a train of 9½ vehicles. I know Rayner's Lane crossing, and was approaching it at a speed of 25 or 30 miles an hour. My place is on the left of the foot-plate. I happened to cross the foot-plate when near the crossing, and I saw, when a few yards from the crossing, a man lying with his head towards Manchester against the inside rail of the up line, and the rest of his body on the left of that line. I stopped the train on seeing this, in nearly its own length. I went back and found the body in the position I have described. The man was not quite dead, but he could not speak. I think he had not crossed the down line, and I thought he had been struck by an up train. I had passed two on my way, the last being a Lancashire and Yorkshire train about Droylsden. The deceased was then put into the van of my train and taken on to Ashton station. The day was very fine.

7. *John Armfield*, guard in the Lancashire and Yorkshire Company's service; 21½ years' service, acting guard 12 months.—I was guard of the 11.55 a.m. train from Stalybridge for Manchester on 28th August. I was the only guard riding in the rear brake-van, the train consisting of seven vehicles. We left at Ashton at about 12 noon and were running at the usual speed at Rayner's Lane crossing, where I was looking out of the window. I saw nothing of the man who was killed, nor did I feel anything as I passed the crossing.

Conclusion.

Though no one actually witnessed the occurrence of this sad accident, there is but little doubt that the unfortunate man (stated to be deaf and 83 years of age) who was killed must have failed to look round towards Ashton, whence the Lancashire and Yorkshire Company's train was approaching, before commencing to cross the line, and that he must have been struck by the engine or some other part of that train, receiving the fatal injuries of which he shortly afterwards died. How it was that he was not seen by either the driver or guard of the train, and that his body was not more injured if the statement as to its being found in the 4-ft. space of the up line with the head against the inside rail of that line is correct, are facts for which it is difficult to account.

Although the railway company obtained parliamentary powers in 1891 to abolish this crossing by the substitution for it of an overbridge, there is, I fear, but little likelihood of the bridge being built for some length of time, as the formation of a road by the trustees of the estate of Lord Stamford, which estate here abuts on the north side of the railway, is a necessary part of the scheme, and there appears to be no prospect at present of this road being made. Meantime the dangers attending the use of the level crossing will continue unless the railway company take such measures as seem practicable to safeguard it. A footbridge, if the gates are kept unlocked (as they must be) and unattended to would be next to useless, as but few persons would take the trouble to use the bridge if there was nothing to prevent their crossing the rails on the level. The only safeguard appears therefore to be to have a gate keeper stationed at the level crossing until it is abolished, and to provide signals in both directions interlocked with the gates. The company should be urgently pressed to adopt these measures without delay.

It might also tend to expedite the action of Lord Stamford's trustees with regard to making the new road if the Board of Trade were to write to them and point out that

it is their non-action as regards making the new road on the north of the railway which retards the abolition of this dangerous level crossing.

I have, &c.,
C. S. Hutchinson,
Major-General, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

List of Accidents that have occurred at the Railway Crossing, Raynor Lane, since April 1878.

Number.	Date.	Name and Address.	Age.	Nature of Accident.	Remarks.
1	9th April 1878	Kesia Andrew, Ashton Moss.	59 years	Thrown from a cart which was caught by a train passing Raynor Lane crossing. Died June 21st 1878.	Fatal.
2	12th May 1880	Eleanor Jones, 20, Turner Lane.	1½ years	Was being taken across Raynor Lane in a perambulator when it was caught by a passing train, throwing the child some distance, causing injuries from which she died same day.	Fatal.
3	27th May 1886	Mary Ann Brown, 38, Spring Street, Stalybridge.	21 years	Knocked down and killed by a passing train at Raynor Lane crossing.	Fatal.
4	6th May 1888	John Stephen Lowery, Littlemoss.	46 years	Knocked down and killed by a passing train at Raynor Lane crossing.	Fatal.
5	6th Nov. 1888	James Arnfield, 7, Fold Street, Droylsden.	23 years	Found dead on the embankment of the Lancashire and Yorkshire Railway at Raynor Lane crossing. Supposed knocked down by a passing train.	Fatal.
6	28th Aug. 1893	George Hiley, 36, Margaret Street.	82 years	Found dead on the Lancashire and Yorkshire Railway at Raynor Lane crossing. Supposed knocked down by a passing train.	Fatal.

Printed copies of the above Report were sent to the Company on the 25th October.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
October 3rd, 1893.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 5th ultimo, the result of my enquiry into the collision that occurred on the 1st idem at Victoria station, Swansea, on the London and North-Western Railway.

In this case, the 4.15 a.m. train from Craven Arms, due at Swansea at 7.45 a.m., failed to stop at the proper place in the station, and came into collision with the buffer-stops at the end of the platform.

Eight passengers are reported to have complained of injuries received.

The train consisted of a four-wheels coupled side-tank engine, and six vehicles, including two empty third-class carriages which were behind the guard's van, and it was fitted throughout with the automatic vacuum-brake.

The engine had its four buffers broken, and five vehicles of the train received injuries, for details of which *see* Appendix.

The buffer-beam of the stop-block was cracked and the plates bent, but the permanent-way was not damaged, and no vehicles left the rails.

Description.

Victoria station, Swansea, is approached from the west on a sharply falling gradient, and special instructions are in force for the protection of trains entering the station. There are two platforms in the station, known as the up and the down platforms, both being signalled for arrival and departure. The down platform is 153 yards long, and 115 yards outside the station (or 268 yards from the buffer-stops) are situated the down home-signals of No. 3 signal-cabin, which control the entrance of the trains into one or other of the platforms. To the west of these signals and 399 yards from them, there is another group of three down home-signals, which are worked from No. 2 signal-cabin.

Starting from these last-named signals and proceeding towards the station, the gradients are as follows:—For 180 yards level, for 30 yards falling at 1 in 57, for 189 yards (*i.e.* up to the home-signals of No. 3 cabin) falling at 1 in 45, for 115 yards (*i.e.* up to outer end of the platform) falling at 1 in 45, and for 153 yards (*i.e.* from the outer end of the platform up to the buffer-stops) level.

The special instructions referred to above provide that all trains shall come to an absolute stop at the home-signals of No. 2 cabin which are 667 yards from the buffer-stops; and also that the signalman in No. 2 cabin shall not accept an incoming train from No. 3 cabin, unless the platform into which the train is to run is clear up to the stops.

North of the down main line, and extending the whole distance from the down home-signals of No. 3 cabin to the entrance to the station is a carriage shed, and between this and the main line there are some sidings and a cattle dock. A special train of horse-boxes was standing in these sidings as the down train approached, and the driver of this special train who had dismounted from his engine and crossed over to the down main line in order to look out for a signal from the shunter, was knocked down by the engine of the incoming train, but fortunately was thrown into the 6-ft. way and escaped without any injury.

The rules in force on the London and North-Western Railway regarding the use of hand-brakes by guards under circumstances such as those existing in the case in question are: (Rule 211, General Rule Book.) "In travelling down steep inclines, "guards must, in order to steady the trains and assist the engine-drivers, apply the rear "hand-brake"; and (paragraph 14, page 50, Appendix to working time book), "guards "must, in all cases use their hand-brakes to assist in stopping trains on approaching "terminal stations, bay sidings, or principal stations, and must not rely on the drivers "pulling up trains by means of the vacuum-brake."

Evidence.

Thomas Jones, signalman, states: On September 1st I came on duty in No. 2 signal-cabin, Victoria station, Swansea, at 5.30 a.m. for a 12 hours' spell. The 4.15 a.m. train ex Craven Arms arrived at my box a quarter of an hour late. I accepted it at 7.58 a.m., and received "on line" at 8.2, and it passed my box at 8.3. The down home-signals are about 180 yards outside my box. There is a rule in force that all down trains are to come to an absolute stop at the home-signals. There are three down home-signals, viz., one for the main line, one for the down main line to the goods yard, and one for the down main line to the Great Western line. The rule is that the home-signal is not to be lowered till the train has actually stopped. I acted upon this rule on the occasion under consideration. I am quite sure that the train came to a stop. I noticed nothing unusual about the train, and it passed my box at the usual speed, that is, about six miles an hour. The driver and fireman were both on the engine, and the driver shut off steam as he passed the box. I cannot say where the driver applied his brake. I did not know anything of a man being knocked down by the engine, until I heard of it from No. 3 box on the telephone. I heard the driver give one whistle. It was not a brake whistle. The driver whistled as he passed the home-signal of No. 3 box.

David Rees, yard foreman, states: I have been in the Company's service 28 years, and I have been yard foreman at Swansea 24 years. On 1st September I came on duty at 5.30 a.m., having left off work the night before at 5.45 p.m. I was in charge of Victoria station, Swansea, on the morning of the 1st September when the 4.15 a.m. train from Craven Arms was due. I did not see the train approaching. I was standing at the top of the platform looking to see if the train was signalled, and as I saw the signal drop I heard the driver whistle. The driver gave three or more sharp whistles, which sounded like the brake whistle. We have no special brake whistle other than a series of short sharp whistles. When I heard the whistle I went up to meet the train and someone said to me that a man was run over, and I hurried up the line. The train passed me as I was going up the line. It was then going about six miles an hour. I was barely 100 yards from the platform when it passed me. I could not see what the driver was doing as he passed me, but he had not got steam on. I cannot say if the brakes were on, but I think I heard them rubbing. When I got up to the yard the driver who had been knocked down was back upon his engine. His name was David Evans, driver of a special horse-box train due out from Swansea at 8.30 a.m. He had dismounted from his engine to look out for a shunting signal, and while standing close to the down main line he was knocked down by the buffer of the engine of the incoming train. I did not see the train run into the stop-blocks. I heard the crash, and then hurried back to the station. The train appeared to

me to be going no faster than usual. I could not see if both the driver and fireman were on the engine.

Henry Harvey, driver, states: I have been in the Company's service about 33 years, and for 30 years I have been a driver. On 1st September I came on duty at 3 a.m., having come off duty at 7.45 p.m. the night before. I came off duty on the morning of the 1st September at 10.15 a.m. The usual time for me to sign off is 9.30 am., but I was delayed in consequence of the collision. I booked on again at 5.30 p.m. and I booked off at 10.30 p.m. at Craven Arms. The following day I should book on at 9.40 a.m. and book off at 7.30 or 7.45 p.m., working continuously. On the 1st September my train, viz., the 4.15 a.m. ex Craven Arms was a little late. When I reached the signals of No. 2 box Swansea, the home and distant signals were both on. I brought the train to an absolute stand at the home-signal. I know that is the rule. As soon as I came to a stand the signals were lowered and I then proceeded. I shut off steam at the brow of the bank, and I applied my brake about halfway down the bank. I did not apply it full force, but the blocks were just rubbing. I did not release the brake at that time. When I reached the corner of the carriage shed driver Evans stepped in front of the engine. I put the brake on full power, but the engine struck him and knocked him down. I looked back to see if he was clear of the rails, and I saw that he was. I then released my brake to draw into the station. The engine was then between the corner of the carriage-shed and the platform. I was travelling about six or seven miles an hour when I released my brake. After I released the brake I turned round a second time to see if the man was up again. I saw him get up. I then applied my brake full power. I was then at the end of the platform. I was travelling at the same speed as usual, but it was my looking back to see after the man that took my attention off my engine, and made me a little late in putting on the brake full power. I usually put the brake on full at the heel of the platform, when the train is under proper control. I whistled before I struck the man. I opened the whistle and left it open as he did not take any notice. He had his back to me at the time. The guard said that he had put on his brake, but I do not know whether he had put it on full or not. I am not aware whether he put on his hand brake or not. I should know in a moment if he put his vacuum brake on, both by my gauge and by the feel of the train. He might have put it on, but the vacuum might have been destroyed before he did so. I am quite certain that I put the vacuum-brake on. I had no conversation with the guard about it after the occurrence. I had 20 inches of vacuum when I applied the brake fully. That is the full amount of vacuum. I had lost some of the vacuum, but I was getting it up again. We have an air pump on the engine, which is at work all the time the engine is running. My engine is No. 214, eight-wheel, side tank engine, with four wheels coupled. It was fitted with a steam-brake working blocks on the four coupled wheels, and acting automatically in conjunction with the vacuum-brake on the train. I am sure the brake was in proper order. It was tested in the usual way before we left Craven Arms. I had several stops to make before reaching Swansea, and the brake worked all right. The brake blocks were in good order. I reversed my engine before striking the stops. I did so as I was passing the parcel office. The wheels did not skid, but went round the reverse way about once. I applied the sand as soon as the brakes were put full on. It was a fine day but wet in patches down the bank. It was not wet in the station. As the engine struck the blocks I jumped on to the platform, but my mate did not jump. He was slightly injured. I drive on the left-hand side and was keeping a good look out. We were running chimney in front.

Thomas Henry Bickerton, fireman, states: I am employed as fireman. I have been with the Company 14 years, and have been fireman for four years. I have been firing for driver Harvey since last November. On the 1st September my hours of duty were the same as my driver's. As we approached the station the signals of No. 2 box were against us, and we stopped dead at the home-signal. As soon as we came to a stand the signal was lowered. The driver gave the engine steam to give her a start to the top of the bank, and then shut off steam. He applied the brake a few yards down the bank, but did not put it on fully. I did not apply the hand-brake. I did not see the man who was knocked down as I was on the other side. The driver whistled and told me to apply the sand, which I did. I saw him apply the brake. At the time he told me to apply the sand we were travelling at from six to eight miles per hour. He did not say anything to me about the man who was knocked down, but simply shouted to me to put down sand. He released the brake near the cattle landing, and put it on immediately afterwards. I then applied sand again. I did not put on the hand-brake. I am supposed to do so, but it has no further effect than the steam-brake. I thought when entering the station that we were going to run into the stop-block. My driver appeared a bit excited, which I attribute to the man being knocked down. I have worked into Swansea every other day for some months. We usually stop about the length of a tender-engine from the block, so as to go forward and run round the train. My thigh was bruised, and I have not been to work since. I am sure the automatic-brake was put on hard at the entrance to the station. I do not know whether the guard applied the automatic-brake, or the hand-brake. The brake acted all right, and there was no fault with it all the way down. The lever of the brake seemed to be a little stiff that morning, but the driver put the lever over all right on entering the station.

Driver *Harvey* recalled.—The brake was a little stiff that morning, but it did not delay me in any way, and if my attention had not been diverted it would have made no difference. I have been running to Swansea for about 20 years, and have never run into the blocks before, and usually pull up clear of the cross-over road.

Richard Wyke, guard, states: I am a passenger-guard, and have been employed by the Company about 35 years. I have been passenger-guard for 23 years, and have been working in this district for 26 years. I booked on at Shrewsbury at 2.45 a.m. on the morning of the 1st instant. I booked off the day before at 2.45 p.m. I booked off at Swansea on the day of the accident at 8.15 a.m., and on again at 6.20 p.m., and afterwards booked off at Shrewsbury at 10.40 or 10.50 p.m. The train came to a dead stand outside the signals of No. 2 box, and as soon as the signal was lowered the train proceeded down the bank. The driver gave steam until we got to the bank, and then I felt him apply the brake. We were running about five to six miles an hour, and the brakes were just rubbing. I heard the driver whistle, and that caused me to look out, and just at the moment I think he had released his brake to drop down into the station. I was looking out coming down, and saw the man fall. I applied the emergency-valve from the van when I was opposite No. 3 box. There were three vehicles between the engine, and my van and the engine would be then by the ladies' waiting room. I do not think the driver applied the automatic-brake on entering the station. I do not know whether the lever was over after the accident. On coming down the bank I put on the hand-brake, and as we were coming down so easily I released it. The rule is for hand-brakes to be applied on entering all terminal stations. I do not know that the driver applied the automatic-brake near the carriage shed. I was then looking out through the window. I first thought that we had too much speed on when passing

No. 3 box. I had 20 inches of vacuum in the gauge then, and I put on the brake. We were then travelling about six miles an hour. The gradient ends about the commencement of the platform. The train was made up of the engine, third-class carriage, two composites, guard's van; and two empty thirds in the rear. The latter are not usual, but we picked them up at Llandovery for use. The train was fitted with the automatic-brake throughout, including the two empty thirds, and the brake was in good working order. We tested it before starting, after attaching the empty coaches at Llandovery. I have been working with driver Harvey, on and off, for 20 years, and for nearly three years regularly, but I have never known him before to make a mistake of this sort, and I have no fault to find with him as a driver. He is very careful. I attribute this accident entirely to his having been confused by the man being knocked down. I was knocked down in the van, but was not otherwise injured.

Conclusion.

The circumstances under which this collision occurred appear from the evidence to be as follows. The train, which was a quarter-of-an-hour late, came to a stand at the home-signals of No. 2 cabin according to the rule, these signals being 667 yards from the buffer-stops. As soon as the train was at rest the signalman lowered the down main home-signal, and driver Harvey gave the engine steam till he reached the brow of the incline which extends from a point 180 yards inside the signal up to the entrance into the station (the gradient being for the greater part of the distance as steep as 1 in 45) when he shut off steam, so as to allow the train to run into the station under control of the continuous brake. As the driver was approaching the down home-signals of No. 3 cabin, which are 399 yards from the stop-block, he saw a man step across from the siding adjacent to the goods shed, and stand close to the main line, almost in front of his engine. He says that he at once applied the brake, which up to that point was just rubbing the wheels, full power, at the same time opening his whistle to warn the man of his danger. The latter appears to have turned round just as the engine reached him, but before he could get out of the way, he was knocked down by the left leading buffer of the engine, and thrown into the 6-ft. way between the main line and siding, and fortunately escaped without any injury. Driver Harvey's attention was almost unavoidably diverted from his train by his natural anxiety to ascertain whether the man who was knocked down had sustained any serious injury. Instead of watching his train and looking ahead, he looked back, and seeing the man in the 6-ft. way clear of the rails, he released his brake, and then looked back again and saw the man get up from the ground.

By this time Harvey's engine was entering the station, and he at once applied his brake full power, and finding that the train had gained too much speed he also reversed his engine, but these measures had not sufficient time to take effect, the platform being only 152 yards long, and the engine struck the buffer-stops with the results already described.

There is some discrepancy between the drivers' and the guards' statements as to whether the former applied his brake fully before he entered the station or not, but I am not inclined to lay much stress on this, as the driver's mind must have been occupied by his anxiety as to the fate of the man who had been knocked down, and it is probable that his recollection as to what happened is somewhat hazy.

At any rate I think the collision may be attributed to the confusion and anxiety produced in driver Harvey's mind, by seeing a man who turned out to be David Evans, driver of a special horse-box train, knocked down in front of his engine, and by his consequent failure to apply his brake in sufficient time to bring the train to a stand at the proper place. Driver Harvey bears an excellent character for steadiness and carefulness, and under the circumstances he can hardly be held severely to blame for the mishap.

It is, however, probable that the collision would have been considerably reduced in violence, if not altogether averted, had guard Wyke carried out the rules already quoted, as to the use of the hand-brake. Those rules leave no discretion to guards, but lay down in definite terms that they shall apply their hand-brakes when running down steep inclines, or when entering terminal stations. Both these conditions were in existence in the case in question, and it was guard Wyke's duty to have steadied the train all the way down the incline, and to have assisted the driver in stopping the train in the station, by the use of his hand-brake. Had he done so the train would not have gained speed so rapidly during the time that the driver's attention was otherwise occupied, and his failure to comply with the rules quoted must be held to have contributed to the collision. He had been on duty about $6\frac{1}{4}$ hours.

The circumstances attending this collision were of an unusual character, and have hardly any bearing upon the much discussed question as to whether drivers should or

should not rely upon their continuous brakes for stopping trains on entering terminal stations.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

(Signed) H. A. Yorke,
Major, R.E.

APPENDIX.

Damage to Rolling-Stock, &c.

Damage to Stop-Block.

Block cracked, and plates bent.

Damage to Rolling-Stock.

Engine 214.—Four buffers broken.

Third-class coach 1344.—Two headstocks broken; one cross-bar beam cracked; one longitudinal beam broken; four buffer-rods bent; three buffer-castings broken; two buffer-shoes broken; two springs broken.

Composite brake 194.—One buffer-rod broken; three buffer-rods bent; one buffer-casting broken.

Third-class 260.—Two buffers bent; four frame cross-bars broken.

Brake-van 228.—Two buffer-rods bent; one buffer-casting broken.

Third-class 1415.—Two buffer-rods slightly bent.

Printed copies of the above Report were sent to the Company on the 18th October.

METROPOLITAN RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
5th October, 1893.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 25th ultimo, the result of my enquiry into the collision that occurred on the 8th idem on the Midland platform line at Moorgate Street station on the Metropolitan Railway.

In this case, the 1.20 p.m. Midland passenger train from Hendon came into violent collision with the buffer-stops at the end of the bay line allotted to the Midland Railway Company at the above station. The train, which is due at 1.53 p.m., but was about five minutes late, consisted of a four-wheeled-coupled bogie tank-engine (running bunker first) and six four-wheeled passenger vehicles, including two third-class brake carriages, one at each end of the train. The four coupled wheels of the engine were fitted with the steam-brake, and all the wheels of the train with the automatic vacuum-brake, both brakes being applied by one handle on the engine.

Eleven persons complained of slight injuries, among whom were the manager of Messrs. Willing's bookstall (which is behind the buffer-stops), and a news boy employed by the same firm.

No damage was done to the engine or permanent-way.

Several of the windows of the train were broken (see Appendix) and the buffer-stops, which were constructed of timber with spring-buffers were damaged beyond repair. The woodwork of the bookstall nearest to the stops was forced back about 18 inches and broken, and the books, &c. thrown down.

Description.

The bay line in question is 132 yards long and is situated on the south side of and next to the main metropolitan lines, which run through Moorgate Street station. The whole station belongs to the Metropolitan Railway Company, but this bay, consisting of one line of rails (signalled for arrival and departure) with a platform on each side, and a short engine siding, are maintained by and at the expense of the Midland Company. There are two other bays used in a similar manner by the Great Northern and London, Chatham, and Dover Railway Companies. The signals admitting trains to these bays are situated about 220 yards from the ends of the platforms, and consist of three semaphore arms on one post, the top arm being the one that refers to the Midland bay.

The line has a falling gradient of 1 in 100 from these signals to a point about 88 yards from the platforms, where the inclination changes to 1 in 200 to the entrance of the bay, from which point it is level up to the buffer-stops. On the platform behind and close to the buffer-stops there is a bookstall belonging to Messrs. Willing & Co.

The signalling arrangements need not be described, as no question concerning them arose during the course of my enquiry.

Evidence.

William Taylor said: I have been in the service 23 years. I have been passed for driver's duties 14 years, and have been driving regularly 11 years, in the London district all the time. I have been accustomed to work passenger trains to and from Moorgate Street occasionally for six months, and for a month prior to this mishap I had been running into and out of the station regularly. On September 8th, I came on duty at 5.10 a.m. to work suburban passenger trains between Moorgate Street and South Tottenham, and between Moorgate Street and St. Albans, and was due off duty at Kentish Town at 2.40 p.m. On September 7th I was standing pilot at St. Pancras passenger station, and came on duty at 7 a.m., and left duty at 7.25 p.m. During the time I was on duty on the 7th I ran my engine light from Kentish Town to St. Pancras, made a trip from St. Pancras to Hendon to fetch some empty passenger vehicles, and took the engine light from St. Pancras to Kentish Town. On leaving Hendon with the 1.20 p.m. train on September 8th, it consisted of a four-wheeled coupled bogie tank-engine No. 1,725, running bunker first (bogie under bunker) and six a four-wheeled passenger carriages. The four coupled wheels of the engine were fitted with the steam-brake, and all the wheels of the carriages with the automatic vacuum-brake, both brakes being applied by one handle from the foot-plate of the engine. On the journey from Hendon to Moorgate Street my train was brought to a stand 11 times by the use of the continuous-brake, which was in good working order, and in each case the train was brought to a stand at its proper place. Nothing unusual occurred between starting from Hendon and approaching Moorgate Street. My train left Aldersgate Street about five minutes late, having been delayed about three minutes approaching Kentish Town, slackened at the St. Pancras tunnel-box, and delayed when passing Smithfield by signals. On leaving Farringdon Street, the steam-gauge showed about 100 lbs. and the vacuum-gauge about 20 inches. On leaving Aldersgate Street my steam-gauge indicated about 80 lbs. and the vacuum-gauge about 15 inches. On approaching Moorgate Street, the signals entering the station were at danger. I shut off steam, and directly afterwards, and before applying the continuous-brake, the signal was lowered for me to enter, and I reapplied steam for a few yards. At this time the steam-gauge indicated about 70 lbs. and the vacuum-gauge 13 inches. I entered the station at a slow speed, perhaps six or seven miles an hour, having only 13 inches of vacuum when I should have had 20 inches. When passing the water-crane, about 160 yards from the buffer-stops, I applied the continuous-brake slightly, and on reaching the end of the platform I applied it fully, but it had little effect. When the engine had passed about half the length of the platform I was afraid I was going a little too fast. At that time the hand-brake was applied and the sand valves open, and I reversed the engine, but as the steam was low it did not appear to have much effect, and I came into collision with the buffer-stop at the end of the station at a speed which I estimate at four or five miles an hour. The buffer-stop was damaged and the book-stall on the platform was displaced. No damage was done to the engine. Some of the carriage door-lights were broken, but no vehicle left the rails. The carriages were worked out on the following train in the usual way, and my engine took out the next appointed train. I attribute the mishap to allowing the engine to get too low in steam. This occurred in consequence of being anxious to hand the engine over in good condition to the driver who would relieve me at Kentish Town on the next journey. With this trip my engine is booked to be at Moorgate Street 37 minutes, and I intended to clean the engine fire when standing on the engine siding at that station, and unfortunately allowed the fire to get too low, causing the steam pressure to be low, and in consequence of this, I was unable to maintain a proper amount of vacuum. When I left Farringdon Street there appeared to be plenty of fire for a good pressure of steam to be maintained, but the fire was lower than I expected, and during the time I was running from Aldersgate Street to Moorgate Street, it was further reduced. I had a litttle coal put on the fire after leaving Farringdon Street, but evidently not sufficient. I know the rule in the Appendix, which says that drivers are to have 20 inches of vacuum before leaving any station, and that not less than this amount is to be maintained during the journey.

William Henry Shaddick said: I have been in the service about 3½ years, a fireman 2½ years, and stationed at Kentish Town all the time. I have, during the last 12 months, worked to and from Moorgate Street several times a day for between 40 and 50 days. On September 8th, I came on duty at 5.10 a.m. to act as fireman with driver Wm. Taylor, and to leave duty with him at the end of the day's work. On September 7th, I was acting as fireman on the carriage shunting engine, and came on duty at 1.15 a.m., left duty at 1.25 p.m., and was off duty from that time on the 7th until 5.10 a.m. on September 8th. When working the 1.20 p.m. passenger train from Hendon to Moorgate Street on September 8th, the train was brought to a stand at all station platforms in a proper manner by the application of the continuous brake, which was in good working order. On leaving King's Cross, I put some coal on the fire, and at Farringdon Street the driver looked at the fire, and expressed the opinion that there was sufficient to take the train to Moorgate Street, it being understood that the fire would be cleaned during the time the engine was at Moorgate Street. At Farringdon Street the steam-gauge showed 100 lbs. and the vacuum-gauge 20 inches. At Aldersgate Street the steam-gauge showed 80 lbs., and after the application of the large ejector, the vacuum-gauge showed 15 inches. After leaving Aldersgate Street, during the time the engine was condensing, the steam and vacuum gauges went down. The signal for entering Moorgate Street station was at danger, and the driver shut off steam and directly he had done so the signal was lowered. He then re-applied steam, and after the train had run a few yards, he shut it off again. When passing the water-crane, the driver applied the continuous brake, and the vacuum-gauge went to about five inches. At this time the speed would be about seven miles an hour. As soon as the engine reached the platform, the driver put the handle of the brake right over. I applied the hand-brake when the engine had proceeded about one-third of the length of the platform, and opened the sand-valves. The driver reversed the engine and applied steam with the engine in reverse gear, but we were unable to

stop, and came into collision with the buffer-stop at a speed of about five miles an hour.

Henry Larner said: I have been in the service 15 years, a passenger guard 10 years, and accustomed to run to and from Moorgate Street all the time. On September 8th, I came on duty at Kentish Town at 1.25 p.m. to work suburban trains between Moorgate Street and South Tottenham, and between Moorgate Street and Hendon, until 12.4 midnight. On September 7th, I worked the same set of trains, and I left duty about 12.4 a.m. On the 8th, I joined the 1.20 p.m. train from Hendon at Kentish Town. My train was due to leave Kentish Town at 1.38, and we actually left at 1.41, three minutes late, the train having arrived from Hendon three minutes late. On leaving Kentish Town my train consisted of engine No. 1,725 and six four-wheeled passenger vehicles, in the following order:—Engine (running bunker first), third-class brake-carriage, third-class carriage, two first-class carriages, one third-class carriage, and third-class brake-carriage in the rear, in which I travelled. All the carriage wheels were fitted with the automatic vacuum-brake, and the train was brought to a stand at the various stations, including Aldersgate Street, in a proper manner by its use. The train left Aldersgate Street at 1.55 p.m., five minutes late, two minutes having been lost from Kentish Town, one at Granville box, and one at Smithfield, by signals. I cannot say what the vacuum-gauge indicated when leaving Aldersgate Street, but on approaching the Whitecross Street box, the signals applicable to trains entering Moorgate Street station were at danger; at this time, I noticed that the vacuum-gauge showed about 13 inches, and I assumed that the brake had been applied and the indication reduced in consequence of the signal being at danger. The train entered the Moorgate Street station at about the usual speed, perhaps six miles an hour. I slightly applied my hand-brake at the entrance to the station, giving it about 2½ turns. I had not the slightest idea the train would not be brought to a stand, and I had my watch in one hand and was taking a letter from the rack with the other, when I was knocked down in the van, causing some injury to my back. I was off duty for about a week in consequence. Several passengers, who were in the train, complained to me of being injured, but none of them appeared to have received any serious injury. The mishap took place at about 1.57 p.m., and the train left for Kentish Town at, I believe, about 2.16 p.m. I know the rule in the rule book as to assisting drivers with the hand-brake when necessary, on running into terminal stations. On this occasion I considered the driver was entering the station at such a moderate rate of speed, that it was not necessary for me to apply the hand-brake full power.

Henry Courtney Piggott Jacobs said: I have been in the service 10½ years, and a goods guard about three years. I have been accustomed to act as passenger guard during the summer months for the past three years, and have worked in and out of Moorgate Street during the whole time I have been working passenger trains. On September 8th I came on duty at 1.25 p.m. to work suburban trains between Moorgate Street and South Tottenham, and between Moorgate Street and Hendon, until about 12 midnight. I worked the same set of trains the previous day, and I left duty at Kentish Town at 12.4 a.m. on September 8th. I travelled in the brake compartment next the engine from Kentish Town to Moorgate Street. Nothing unusual occurred, so far as I know, between Kentish Town and Aldersgate Street. The train was properly brought to a stand at each station by the application of the continuous brake which was in good working order. On approaching Aldersgate Street the vacuum gauge showed 20 inches, and shortly after leaving that station it showed about 15 inches. The signals for trains entering Moorgate Street station were at danger, but the home-signa was lowered before the train was brought to a stand On passing the engine siding I looked out to take the number of the engine and the name of the driver that would take the train from Moorgate Street. The train entered the station at about the usual speed, very slowly. I took my book and entered the name of the driver and the number of the engine for the outgoing journey, and it was not until perhaps a second before the engine came into collision with the buffer-stop that I had any idea that the train would not be brought to a stand in the usual way. At this time I took hold of the brake-handle, and before I had time to apply the brake the engine came into collision with the buffer-stops, and my head struck the front portion of the brake-carriage. I had noticed the vacuum-gauge going down, but I assumed that this resulted from the driver applying the brake. I know the rule as to guards assisting the drivers when necessary with the hand-brake on running into terminal stations. On this occasion I thought the speed so moderate that there was no occasion for me to apply the hand-brake. I thought the driver was going to stop at the right place.

Thomas Westall said: I have been in the service 19 years, and a driver six years, and stationed in the London district all the time. I have been accustomed to run to and from Moorgate Street as driver and fireman nine years. On September 8th, I came on duty at 7.52 a.m. to work suburban trains between Moorgate Street and Hendon and Moorgate Street and South Tottenham, finishing at Hendon with the train due there at 7.10 p.m. When the 1.20 p.m. passenger train from Hendon to Moorgate Street was entering the Moorgate Street station, I was upon my engine in the engine siding at the Kentish Town end of the station, and I noticed the train from Hendon entering the station. I estimate the speed at about seven miles an hour, the usual speed at which trains enter. The first thing that I noticed unusual was when the rear vehicle arrived alongside the platform the speed appeared to be about the same as when the engine passed my engine, and the speed at this time should have been reduced, but it did not occur to me then that the train would not be brought to a stand before the engine reached the buffer-stops. Shortly afterwards I heard a noise, and I saw some Great Northern platelayers going from the Great Northern platform line to the end of the Midland platform, and very shortly afterwards the signal was taken off for my engine to leave the engine siding to go to the rear end of the train from Hendon, and I took my engine towards the train and brought it to a stand before reaching it. I then left my engine and walked forward, and found that the engine of the train from Hendon had come into collision with the buffer-stops. I noticed a gentleman in one of the compartments of the carriages who appeared to be somewhat injured. Several of the windows of the carriages were broken, but none of the vehicles left the rails, and all the carriages were in a fit state to travel. My engine was ultimately attached to the train, and I left Moorgate Street about 16 minutes late. The continuous brake on the vehicles was in a satisfactory condition, and I used it in making all the stops from Moorgate Street to Hendon, and from Hendon to Kentish Town.

Alexander Arnold said: I am a porter at Moorgate Street and have been in the service 25 years. On September 8th, I came on duty at 12.51 p.m. to remain until 11.40. p.m. I was on duty the same hours the previous day. When the 12.20 p.m. passenger train from Hendon was entering the station, I was on the platform on the east side of the Midland dock line, about half-way between the buffer-stops and the north end of the platform, sweeping the platform. I did not notice anything unusual in the speed of the train when it passed me, and the first thing that attracted my attention was

the noise caused by the engine coming into collision with the buffer-stops. One passenger, an elderly gentleman, had received a bruise on his face, and an old lady complained of being shaken.

John Stretton said: I am a porter and have been in the service 16 years and at Moorgate Street 14 years. On September 8th, I came on duty at 5.33 a.m. to remain until 4.0 p.m. I was on duty for the same number of hours the previous day. When the 1.20 p.m. passenger train from Hendon was approaching Moorgate Street, I was in the ticket collector's hut, ready to perform ticket collecting duties. I did not notice the train until the engine was about 8 or 10 yards from the buffer-stops. At that time, the speed of the train appeared to me to be too high for it to be brought to a stand before reaching the buffer stops. I therefore left the hut intending to tell the book-stall attendants to leave the stall, but before reaching the stall, the engine had come into collision with the stops.

Conclusion.

This collision was due to the fact that driver William Taylor allowed the pressure of steam in his engine to get so low that he was unable to maintain the proper amount of vacuum for the due application of the continuous brake.

On leaving Farringdon station, which is four minutes run from Moorgate Street, the gauges showed 100 lbs. of steam, and 20 inches of vacuum. The driver and fireman examined the fire there and a little coal was put on, the driver expressing an opinion that there was sufficient fire to take the train to Moorgate Street where the engine was to be changed. On leaving Aldersgate Street, which is only two minutes run from the end of the journey, the steam-gauge showed only 80 lbs. of steam, and the vacuum gauge 15 inches of vacuum. The train was checked by signal outside Moorgate Street station, and the vacuum-brake was consequently applied, and the steam pressure and vacuum were thereby further reduced to 70 lbs. and 13 inches respectively. Before however the train was brought to a stand, the signal for entering the station was lowered, and the driver re-applied steam for a few yards, and entered the station, according to his statement, at about six or seven miles an hour. On passing the water-crane, which is 160 yards from the buffer-stops, Taylor applied his continuous brake slightly, and on reaching the end of the platform, which is 130 yards long, he applied it at full power. But owing to the deficient vacuum the brake did not have the usual effect, and although the hand-brake was then applied by the fireman and the engine reversed by the driver, the train was, accordingly to Taylor's admission, still travelling at five miles an hour when it collided with the stops. The shock was evidently severe, judging from the damage to the stops themselves and to the bookstall immediately behind them.

Taylor gave his evidence in a very satisfactory manner and made no attempt to evade his responsibility. The only reason he could give for allowing his steam to get so low was that as he had only one more trip to make that day, viz., from Moorgate Street to Kentish Town, he was anxious to hand over the engine in a satisfactory condition to the driver who was to relieve him at the latter place, and for this purpose he intended to clean his fire while standing at Moorgate Street.

There is however an instruction to drivers with which Taylor acknowledges that he was acquainted, to the effect that not less than 20 inches of vacuum are to be maintained during a journey, and inasmuch as he failed to observe this rule, he must be held responsible for the collision. He had been on duty 8 hours and 47 minutes at the time.

It is much to be regretted that neither the fireman, nor the guards of whom there were two, applied their hand-brakes when the train was entering the station. It is true that the fireman put on the hand-brake after it was found that the continuous brake had failed to act, but this was too late. The Midland Company appear to have no rule concerning the application of the hand-brake by firemen, and the only rule for the guidance of guards is as follows: "(No. 293.) Guards must watch the speed of trains and assist engine-drivers by the use of the hand-brake when necessary." Guards Larner and Jacobs excuse themselves for not having applied their hand-brakes on this occasion by saying that the train entered the station at so slow a rate of speed that they thought the driver had full control of it, and Larner adds though he was aware at the time that the gauge showed only 13 inches of vacuum, he thought that the driver must have just applied his continuous brake and thereby reduced his vacuum. In the absence of more definite rules as to the use of hand-brakes by guards and firemen these men cannot be fairly held to have contributed to the mishap by the omission on their part to make use of the hand-brakes at their disposal. But the fact remains that there was ample hand-brake power on the train, irrespective of the automatic vacuum-brake to have averted the collision.

Once more attention is directed by this occurrence to the rule concerning the use of continuous brakes on entering terminal stations. The existing rule, which has been often quoted before, is as follows: "(No. 293.) Engine-drivers must always enter "such (terminal) stations or a dead-end bay at any station at such a speed as to enable "them to stop the train at the proper place by the application of the ordinary hand-"brake only, &c." The exact interpretation of this rule has been much discussed, but the Midland Railway Company, and certain others, take it to mean that trains are to enter such stations at hand-brake speed, and not that the hand-brake only is to be used for stopping them.

On this occasion it is stated, and there is no evidence to the contrary, that the train entered the bay at hand-brake speed, but no use was made of the hand-brakes until too late, because all concerned, driver, fireman, and guards, were relying upon the continuous brake, which however failed to stop the train owing to the driver's neglect to maintain a sufficient vacuum.

The rule above quoted is not sufficiently explicit and leaves too much to the discretion of drivers. The inspecting officers of the Board of Trade have frequently pointed out the desirability of some modification of it.

As I have stated on a previous occasion, the object to be arrived at is to ensure that drivers shall always when entering a terminal station, have a sufficient margin of brake-power and time available to meet unforeseen contingencies. Hand-brakes can hardly be regarded as supplying this reserve, for the reason that they take an appreciable time for their application, and when an emergency arises or when for any reason the continuous brake fails to act as in this case, there is rarely if ever, time for the hand-brakes to be brought into play.

I have, &c.,
H. A. YORKE,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

DAMAGE TO ROLLING STOCK.

Third brake 1,543.—Three quarter-lights and one door-light broken.

Third brake 1,542.—Four quarter-lights broken.

Third-class 415.—Two quarter-lights and one door bottom-panel broken.

First-class 313.—Three quarter-lights broken.

First-class 314.—Two door-lights, one quarter-light, and one waist-panel broken.

Printed copies of the above Report were sent to the Metropolitan and Midland Railway Companies on the 25th October.

MIDLAND RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
August 15, 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 8th instant, the result of my enquiry into the circumstances attending an accident which occurred on the 1st instant in Wickwar tunnel, between Bristol and Gloucester, on the Midland Railway.

In this case, as the 8.5 a.m. passenger train from Bristol to the North (consisting of engine and tender, brake-van, two composite, three third-class, and one composite carriages, brake-van, one composite carriage, and rear brake-van) was running through Wickwar tunnel, at about 8.35 a.m., the leading pair of wheels of the second vehicle from the engine (a composite carriage) and all the wheels of the seventh, eighth, and tenth vehicles left the rails. All these vehicles except the last, a brake-van, ran off towards the left or the wall side of the tunnel, but only one of them, the eighth vehicle, a brake-van, struck the tunnel wall.

The train, which was 132 yards in length, was brought to a stand with the rear brake-van 466 yards north of the first mark of any pair of wheels being off the rails,

and this pair of wheels, which were the leading wheels of the second vehicle in the train, must have run off the rails for a distance of 568 yards.

No person complained of injury at the time, but three persons have since complained of having been slightly shaken.

The damage to the rolling-stock and to the permanent-way, of which a full return is appended, were remarkably slight considering the nature of the accident.

Description.

Wickwar tunnel, which is 1,399 yards in length, is situated between 14 and 15 miles north of Bristol, the 14th mile-post being close to the south end of the tunnel, and the 15th mile-post being close to Wickwar station, just north of the tunnel.

The line is straight, and upon a gradient of 1 in 278 falling northwards.

The next block signal-cabin southwards is at Yate, which is 4 miles 35 chains south of Wickwar signal-cabin, and 3 miles 42 chains south of the south end of the tunnel.

The up line through the tunnel has just been relaid with the standard Midland permanent-way, and the ballast is broken stone.

The first trace of any wheel having left the rails was a mark on a chair-top inside the right-hand rail, or the rail on the 6-ft. side, 542 yards inside the south end of the tunnel.

The engine and the vehicles composing the train were all in good order.

Evidence.

William Henry Watts Bray, in the service of the Midland Railway Company 29 years, and a driver about 22 years, stationed at Bristol all the time, said: On August 1st I came on duty at 7.5 a.m. to work the 8.5 a.m. passenger train from Bristol to Derby, and the 2.10 p.m. Derby to Bristol, due to arrive at Bristol at 5.22 p.m. I left duty at 7 a.m. on Sunday July 30th, and was off duty on Monday July 31st. On August 1st I left Bristol at 8.5 a.m., right time. My train consisted of eight-wheeled engine, single driving, bogie in front, No. 39, six-wheeled tender, and 9 vehicles, equal to 10. The driving wheels of the engine and the six wheels of the tender were fitted with the steam-brake, and the whole of the carriages with the automatic vacuum-brake, the steam brake on the engine and tender and the automatic vacuum-brake on the train being applied by one handle from the foot-plate of the engine. I brought my train to a stand at Mangotsfield by use of the continuous brake, which was in perfect working order. Nothing unusual took place after leaving Bristol until after the train had entered the Wickwar tunnel. On approaching the tunnel the Wickwar station up distant-signal was off, and I estimate the speed of my train at the time at between 40 and 50 miles an hour. After entering the tunnel some little distance, I cannot say how far, the engine oscillated slightly. Shortly afterwards I felt a jerk in the train, and noticed that the needle of the vacuum-gauge was moving backwards and forwards. I then looked along the train on the 6-ft. side, and saw fire flying. I at once shut off steam and slightly applied the continuous brake, and shortly afterwards applied it fully, and my train was brought to a stand in the tunnel. I at once told my fireman to go forward and stop any approaching down train, and advise the station-master and signalman at Wickwar that something was amiss, and that my train had been brought to a stand in the tunnel. After securely applying the hand-brake on my tender, I left my engine and returned alongside the train, and met the guard, who informed me that the down line was clear at the rear of the train, and I informed him that the down line was clear at the front. The guard at once went back to protect the train in the rear, and I called out that the down line was clear. Shortly afterwards a platelayer arrived, and I told him to go to Wickwar station and advise the station-master that the down line was clear. The station-master very shortly afterwards arrived, and made arrangements for working the traffic in both directions on the down main line. The van next to my engine was uncoupled from the remaining portion of the train, and I attached a carriage at the station, and ultimately left Wickwar for Gloucester with my engine, the van and the carriage that had been attached taking the passengers forward to Gloucester. When walking alongside the train in the tunnel I noticed the vacuum-pipe between two of the vehicles had become disconnected, but the screw-coupling remain secure. I believe the vacuum-pipe had become disconnected by the vehicles running over the sleepers after I had applied the brake. After arriving at Gloucester I worked with the same engine a passenger train to Birmingham, and the 3.20 p.m. Birmingham to Bristol. On the following day I worked with the same engine the 12 22 p.m. passenger train from Bristol to Derby, and the 5.47 p.m. Derby to Bristol. Before leaving the tunnel with my engine I examined it, and again after leaving the tunnel, and found it in perfect working order. No passenger complained to me of personal injury. Some little time after the accident I had a conversation with Mr. Meredith, and told him I felt nothing unusual before the mishap occurred. What I meant was, although I believe the engine oscillated a little before I felt the jerk on the train, the oscillation was nothing more than might be experienced on any part of the railway. There was no ballast at all upon the line above the bottom of the sleepers. The continuous brake was not applied by me until after I saw the needle on the gauge moving, and I then applied it cautiously. I cannot state between which vehicles the vacuum hose-pipe was found to be severed.

John Morley, fireman, in the service of the Midland Railway Company 7½ years, and a fireman five years, stationed at Bristol all the time, said: On August 1st I came on duty at 7.5 a.m. to act as fireman with driver Bray. I left duty with Bray the previous Sunday morning, and was off duty on Monday July 31st. On August 1st I left Bristol at 8.5 a.m., right time. On approaching Wickwar tunnel I noticed that the Wickwar station up distant-signal was off. Shortly after entering the tunnel I noticed the needle of the vacuum-gauge moving backwards and forwards. I looked back on the near side of the train and saw fire flying. At the same time my driver said something to the effect that he believed the carriages were off the road, and he gently applied the

continuous brake. After the speed of the train had been reduced he applied the brake fully, and the train was brought to a stand. My driver then told me to go to Wickwar station and stop any approaching down train, and advise the station-master and signalman. I obtained my hand-lamp from the box and lighted it. I also obtained some detonators. I then lighted the lamp on the left-hand buffer and placed a red shade in it. I then left the engine to go towards Wickwar and after going some distance I met a platelayer. About this time I heard the driver call out that the down line clear, and the platelayer told me to go back to the engine, and that he would go to the station and advise the station-master and signalman that something was wrong with the up train in the tunnel. I then returned to my engine. The speed of the train through the tunnel was the usual speed, viz., 40 to 45 miles an hour.

Robert McKee, in the service of the Glasgow and South-Western Company 23 years, a passenger guard 18 years, and accustomed to run over the Midland Railway between Carlisle and Bristol four weeks, said: On Tuesday, August 1st, I came on duty at 7.30 a.m. to work the 8.5 a.m. passenger train Bristol to Glasgow, due to arrive at Glasgow at 7.25 p.m. On July 31st I worked the 10 a.m. passenger train from Glasgow to Bristol, and left duty at about 9.30 p.m. I was off duty on Sunday, July 30th. On leaving Bristol on August 1st my train was made up in the following order:—Engine 39, tender, leading brake-van, two composite carriages, three third-class carriages, one composite carriage, one brake-van, one six-wheeled bogie composite carriage, and brake-van in the rear, in which I travelled. The train was fitted throughout with the continuous brake, capable of being applied from the foot-plate of the engine and from each brake-van. My train left Bristol at 8.5 a.m., right time, and Mangotsfield, with the train in the same order, at 8.20 a.m., right time. The train was properly brought to a stand at Mangotsfield by use of the continuous brake. Nothing unusual took place between Bristol and Wickwar tunnel. Shortly after my brake-van entered the tunnel it appeared to me that the wheels were skidding, and directly afterwards it left the rails. I was standing up at the time attending to my parcels and luggage. I was thrown on to some luggage, but regained my feet as soon as possible, and went to the continuous brake valve with a view of applying the brake, but I found it had already been applied, and shortly afterwards the train came to a stand. I at once lighted my hand-lamp. My brake-van was off the rails, and I am not certain whether it was off on the 6-ft. side or on the wall side, but I was satisfied that it was clear of the down main line. I went along the train to ascertain if the other vehicles were clear of the down line, and when I had passed about half way along the train I met the driver, who informed me that the front portion of the train was clear of the down line, and I informed him that the rear portion was clear. I then returned to my van, obtained some detonators, and made the best of my way to a long distance outside the tunnel to afford protection to my train. I remained there until I was relieved by a flagman. I then returned. A carriage was placed on the down line opposite the train, an invalid lady was removed from the train to the carriage, and at 10.33 a.m. I left Wickwar for Gloucester with engine No. 39, the leading brake-van of the train from Bristol, and the carriage that had been attached at Wickwar. After lighting my hand-lamp I looked at my watch, and I believe it was 8.37 a.m., but of this I am not quite sure. I am unable to form any idea of the speed at which we were running when entering the tunnel. It did not occur to me that there was anything unusual in the speed in any way. I did not feel any unusual oscillation until after it appeared to me that the wheels of my van were skidding. It was very shortly after my brake-van entered the tunnel that I noticed the wheels begin to skid, but I cannot form any idea as to how many seconds the van had been in the tunnel, or the distance it had travelled in the tunnel, when the skidding took place. I had travelled from Bristol on the previous Saturday, and there was no slackening of the train at that time. I cannot remember being slackened either on the Thursday or the Tuesday preceding the day of the accident. When I met the driver it was in the 6-ft. way, about half way up the train.

Thomas Smith, in the service of the Midland Railway Company about 42 years, and a signalman at Wickwar 40 years, said: On August 1st I came on duty at 6 a.m. to remain until 6 p.m. On July 31st I was on duty from 6 a.m. to 6 p.m. On July 30th I left duty at 6.18 a.m., after performing 12 hours night duty. I was absent from the signal-box for a necessary purpose when the "Is line clear" signal for the 8.5 a.m. train from Bristol was signalled from Yate. I had left station-porter William Jennings in the signal-box, and on my return I found that Jennings had given permission for the 8.5 a.m. passenger train from Bristol to approach at 8.26 a.m. At 8.30 a.m. I received the "Train entering section" signal from Yate. The train did not approach in the usual time, and this was the first that I knew of anything being wrong. Shortly afterwards I noticed some of the platelayers running towards the mouth of the tunnel, and a little time after this station-porter Jennings told me there was something amiss in the tunnel, and he afterwards told me not to give permission for any train to approach. At this time the 8 a.m. passenger train from Gloucester was approaching from Charfield. I kept my signals at danger and brought it to a stand at the station. This train arrived at 9 a.m., and shortly afterwards a carriage was detached into the siding. The station-master informed me that the down line in the tunnel was clear. I gave the "Is line clear" signal to Yate for the down train at 9.16 a.m., and the "Train entering section" signal at the same time, and I received the "Train out of section" signal for this train from Yate at 9.25 a.m. Before the train left for Yate the station-master made out the usual single line forms for working the traffic in both directions on the down line between Wickwar and Yate, himself to act as pilotman, block-telegraph working being maintained on the single line between Yate and Wickwar.

John Cater, in the service about 25 years, and a signalman at Yate 23 years, said: On August 1st I came on duty at 6 a.m. to remain until 6 p.m. I was on duty from 6 p.m. Sunday, July 30th, to 6 a.m. on Monday, July 31st; and also from 12.30 p.m. to 6 p.m. on Monday, July 31st. On August 1st I received the "Is line clear" signal from Westerleigh junction for the 8.5 a.m. train from Bristol at 8.13 a.m., "Train entering section" signal 8.26, and the train passed my post and I gave the "Train out of section" signal to Westerleigh junction at 8.30 a.m. I forwarded the "Is line clear" signal to Wickwar at 8.26 a.m., the "Train entering section" signal at 8.30, and at 9.25 a.m. the needle of the up line circuit block-telegraph instrument was unpegged, but the "Train out of section" signal was not received. This was done in order that block-telegraph working in both directions on the down line could be established between Wickwar and Yate. The train on passing my signal-box appeared to do so at about the usual speed. I was looking out of the window as it passed, but did not notice anything unusual in any way in connection with it.

Frederick Watkins, in the service of the Midland Railway Company 16 years, first three years as ordinary porter, signal porter, and station porter, and station-master about 13 years, and at Wickwar three years, said: On August 1st I came on duty about 7.30 a.m. to remain until 6 p.m. On July 31st I

was on duty the same number of hours. After the departure of the up slow train at 8.18 a.m. I left to have my breakfast, and some little time afterwards porter Jennings came to me and said he had heard an engine whistling in the tunnel, and he thought there was something amiss with the up express. I at once ascertained that the signalman at Wickwar station knew of the block and then went into the tunnel. I found some carriages were off the rails, and made arrangements as soon as possible for all the passengers, except one invalid lady and a lady and gentleman who were travelling with her, to leave the carriages and walk out of the tunnel. I had a carriage detached from the 8 a.m. train from Gloucester, and arranged for all traffic to be worked on a single line between Wickwar and Yate, myself acting as pilotman. After accompanying the down train from Wickwar to Yate, and an up passenger train from Yate to Wickwar on the down line, I took the engine of the up express, the leading van, and the carriage that had been detached from the down train, into the tunnel on the down line for the invalid lady and the lady and gentleman who were travelling with her, and after taking up the passengers who had walked to Wickwar station, despatched the train to Gloucester. I continued to act as pilotman until the up line was clear and made passable at 11.20 p.m. When walking alongside the carriages shortly after the mishap one or two of the passengers said something about being shaken, but after they had left the carriages and reached the station not a single complaint respecting personal injury was made.

William Jennings, in the service six years, and porter at Wickwar two years, said: On August 1st I came on duty at 7.45 a.m. to remain until 8.30 p.m., with 1½ hours interval for meals. On July 31st I was on duty during the same hours. After the 7.15 a.m. passenger train from Bristol to Gloucester had left the station, signalman Smith asked me to go into the signal-box during the time he left for a necessary purpose. I did so and received the "Train out of section" signal for the slow train from Charfield at 8.26 a.m., but by mistake I entered it 9.26 a.m. At 8.26 a.m. I received the "Is line clear" signal from Yate for the 8.5 a.m. train from Bristol, and shortly afterwards Smith returned and received the "Train entering section" signal for the Bristol train from Yate. After the signals which had been given to Charfield were accepted I lowered the signals for the Bristol train to pass. I then left the signal-box and went into the goods yard to look after my own work. Very shortly afterwards I heard an engine whistle in the tunnel. I came on to the main line side of the waggons and saw some men running into the tunnel. I went towards the tunnel when someone shouted to me, "Tell the signalman to block the line; the express is off the road." I went to Smith and told him the express was off the road. I then went to the station-master's house and the station-master and I went into the tunnel together and found some of the carriages of the train off the line. The station-master then told me to go to the signal-box and telegraph for the break-down vans and inform by telegraph the heads of departments and Inspector Veale.

George Dancocks, in the service 23 years, and a relaying ganger about 17 years, said: I relaid the up line through Wickwar tunnel. The road was relaid on Sunday, July 23rd, and the greater part of the old material removed from the tunnel the same day. The spent ballast was removed from the up line before July 23rd, and on July 24th and following days I packed and straightened the line. A hand signalman by day and one by night were appointed during this time to caution trains running over the line. The hand signalmen were withdrawn on the evening of Thursday, July 27th. On the morning of the same day my inspector, Jones, as I had finished the work in the tunnel, gave me instructions to go to Rangeworthy Colliery sidings to remove some disused connections. I therefore took the greater part of my men, including the flagmen, to that work. I was satisfied that the road through the tunnel was in good condition, and that the hand signalmen could be safely withdrawn. My hours of work are from 6 a.m. to 5.30 p.m., with half an hour off for breakfast and one hour off for dinner. When we left the line the road was in good line, and every sleeper was well packed up. There was no top ballast at all. The whole 70 chains were in the same condition. It was by the inspector's orders that the flagmen were withdrawn. It is our regular practice to withdraw the flagmen as soon as the rails are in line and the sleepers properly packed, without waiting until the top ballast is in. When the accident happened I was at Wickwar. I went to the spot at once, getting there at about 9.30 a.m., and I found that several vehicles were off the rails. I cannot say how many were off on the 6-ft. way side or how many on the tunnel wall side, but I know from the marks that some were off on the latter side. I did not examine the line behind the train until at about a quarter to ten, and then I examined it with Mr. Meredith. I could not find anything to account for the train leaving the rails. I found the rails right to gauge all along. The up line was in some places slewed bodily to the 6-ft. way side and in some places to the tunnel wall side. That was some distance behind where the train was standing. The nearest mark to Bristol of anything amiss was a mark on the top of a chair on the rail on the 6-ft. side, inside this rail, and immediately afterwards there were two broken chairs on that side. The first mark on the left side or tunnel wall side was a broken chair on the sleeper next north of the first mark on the right side. A few sleepers nearer to Wickwar that the first mark the line was slewed to the 6-ft. side about three or four inches I should think. There was no low joint all through the length.

Caleb Nicholls, in the service of the Midland Railway Company 12 years, and second ganger in relaying gang nine years, and appointed ganger of the Wickwar tunnel length on July 21st, said: On August 1st I came on duty at 8 a.m. to remain until 5.30 p.m., as I am at present residing a long distance from my work. The ordinary hours of duty are from 6 a.m. to 5.30 p.m., with 1½ hours interval for meals, and on Saturdays from 6 a.m. until 1 p.m., with half an hour interval. I assisted to relay the up line in the Wickwar tunnel on July 23rd. I walked over the road on the afternoon of Monday, July 31st, and found the line and level good. The work of relaying was finished on Sunday 23rd. The relaying gang left on the following Thursday, and after that I had charge of the length. The line was level and in good order all through when the relaying gang left, but there was no top ballast. All the work my gang did after the relaying gang left was driving keys, tightening up bolts, and throwing in a little ballast from the 6-ft. way, which we were clearing up. If I were to open a length of old road, removing all the top ballast, I would certainly put out flagmen, but I would not consider it necessary to do so with a newly-relaid road left in the same condition as this road was left. The line was walked by my assistant ganger, George Hallett, on the Tuesday morning. When the accident happened I was at Wickwar in the yard. I went at once to the spot and found others of the gang there. I examined the road from the Wickwar end of the tunnel as far as the second shaft from the Bristol end. This shaft is on the Bristol side of the first mark on the permanent-way. I went back as far as I could find any marks, and further. I could find nothing on the line, or near it, which could have thrown the train off, and at the place where the first mark was found of a wheel leaving the rails, the line was level and in perfect order. It was in good gauge, there was no key out, and no low joint. About two rail-lengths on the Wickwar side of the first mark the up line was

slewed into the 6-ft. way about three or four inches. After that it was twisted both ways. I cannot form any opinion of the cause of the first wheel leaving the rails.

George Hallett, in the service of the Midland Railway Company 20 years, a platelayer all the time, and second ganger on the Wickwar tunnel length between four and five years, said: On August 1st I came on duty at 6 a.m. to remain until 5.30 p.m., with 1½ hours interval for meals. I performed the same duties the previous day. Between 6 a.m. and 7.30 a.m. on August 1st I examined separately both rails of the up line through the tunnel. I entered at the Wickwar station end and carefully examined the outer rail, and returned from the Bristol end of the tunnel and examined the 6 ft. rail. The road at that time was in good condition. I was at the Wickwar end of the tunnel when the accident happened, and I went straight through and found nothing wrong with the line. I had just left breakfast. It was at 8.30 a.m. when I heard the engine whistling according to my calculation, allowance being made for my watch being not correct.

George Cam, in the service of the Midland Railway Company 30 years, and a platelayer on the Wickwar tunnel length about 12 years, said: On August 1st I came on duty at 6 a.m. to remain until 5.30 p.m., with 1½ interval for meals. Between 6 a.m. and 8 a.m. I was engaged examining the road from the Bristol end of the length, and casting ballast from the 6-ft. space into the 4-ft. space of the up line on the Wickwar side of No. 4 shaft. During a portion of this time the tunnel was quite clear of steam and smoke, and I could see the line through to the Bristol end. I am satisfied that both the line and level of the road were good. Five men besides myself were at work between Nos. 4 and 5 shafts, casting ballast from the 6-ft. space into the 4-ft. space of the up line.

William Wilkins, in the service of the Midland Railway Company 30 years, and engaged on the Wickwar tunnel length all the time, said: On the morning of August 1st I was working in the Wickwar tunnel with platelayer Cam. I could see to the Bristol end of the tunnel. The up road, so far as I could see, was in good order.

Meredith Jones, in railway service about 35 years, with the Midland Company 16 years, and inspector on the Bristol length 12 years, said: The Wickwar tunnel is in my district. About a month since I received instructions to relay the up line through Wickwar tunnel. On July 18th I commenced to remove the spent ballast, and between that day and July 23rd the spent ballast was removed, and all the new rails, sleepers ready chaired, fish-plates, bolts, and keys were placed in the tunnel. On Sunday, July 23rd, the old rails, chairs, &c., were removed and the new ones laid down, and the greater part of the old material was removed from the tunnel. The sleepers of the new road were packed sufficiently on the Sunday to enable trains to pass over at a slow speed. A hand caution signalman by day and one by night were employed to caution drivers, in accordance with the Company's regulations, from July 18th until the evening of July 27th. On Monday, July 24th, I walked over the work and found that it was standing well for trains to pass over cautiously. On the morning of July 27th I walked over the road and examined it, and I was then satisfied that line and level were good, and the sleepers well packed, and, in my opinion, the road was in a fit condition for the caution signalmen to be withdrawn. I therefore gave the relaying ganger instructions to leave three or four of his gang with the length ganger to pay attention to the new road and for him to take the remainder of his men to other work on another part of my district. I am responsible for the flagmen being withdrawn on the evening of July 27th. On August 1st, about 9.30 a.m., I was at Fishponds station when the Bristol break-down vans arrived. Being satisfied that something was amiss, I accompanied the vans and ascertained that they were going to Wickwar tunnel in consequence of some carriages being off the line. When I arrived in the tunnel at perhaps 11 a.m., I found some carriages were off the rails, but from what cause I have been unable to ascertain. My district extends from Bristol to Wickwar, 15 miles. On the 27th July the new line was perfectly level and properly packed, but there was no top ballast at all. It is my custom to leave a line to be run over in that condition without any restriction of speed or caution to drivers. After the accident I examined the line with Mr. Meredith and others, and took careful notes as to the marks. I could find nothing to account for the train leaving the rails. I did not find any piece of an axle-box on the Bristol side of the first mark, but I found a small bolt, about 3 ins. long, of ½-in. round iron. It was lying in the 6-ft. way just outside the rail. There was no mark of anything having run over it. It was a permanent-way bolt. I think it was a bolt out of an axle-box. We often find such bolts about the line. I do not for a moment suggest that it was this bolt which caused the accident. I found several bits of axle-boxes between the first mark and the rear of the train. The largest piece was about 3 ins. by 4 ins. and ¼ in. thick. I am at a loss to account for the accident. All the fastenings were in both before and after the accident. There was not a bolt drawn on the whole length.

George Flook, in the service of the Midland Railway Company 34 years, and carriage examiner 15 years, said: On August 1st I came on duty at Temple Meads station at 5.45 a.m. to remain until 5.45 p.m. Meals are taken during the intervals between trains. The carriages forming the 8.5 a.m. train from Bristol to the North were brought to the passenger station with those forming the 7.15 a.m. from Bristol to Gloucester, and were backed alongside the Midland platform, which is on the off or 6-ft. side of the train. I stood on the planked crossing at the Gloucester end of the platform, and carefully watched the underworks of the carriages as they were slowly backed to the platform, and after they were brought to a stand, I walked round the side farthest from the platform, which was the near side of the train after it left Bristol. I am satisfied that when the carriages left Bristol they were in a fit and proper state to travel. When the engine was attached to the train I saw the vacuum-pipe coupled, and I afterwards went to the rear van, lifted the valve, and ascertained that the brake was in proper working order.

Herbert Parsons, in the service of the Midland Railway Company 16 years, and carriage examiner and examiner and repairer of continuous brakes about 13 years, said: On August 1st I came on duty at 5 a.m. to remain until 5 p.m., with 1¾ hours interval for meals. I performed the same duties the day before. I thoroughly examined the carriages forming the 8.5 a.m. train from Bristol shortly before they left the sidings near Lawrence Hill junction, and found them in good condition. I took an hour and 10 minutes in making my examination.

William Milton, in the service of the Midland Railway Company 17 years, and foreman in the carriage department in the Bristol district five years, said: On the morning of August 1st I was at the Bristol passenger station, intending to go to Bath by the 9.10 a.m. train, when I heard of the mishap in Wickwar tunnel. I went to the place as soon as possible, and on arriving at the tunnel about 10 a.m. found that the engine and leading van had been taken away. I made careful examination of the carriages, and found them in the following condition and order from the Wickwar end:—Midland composite carriage No. 855, off the rails with the leading pair of

wheels, one wheel being between the up line and the side of the tunnel, and the other in the 4-ft. space. The off-side leading axle-box was broken. The next four vehicles, viz., Midland composite carriage No. 60, and third-class carriages 1098, 941, and 873, were on the rails, and so far as I have been able to ascertain were not damaged, except that the shackle of the screw-coupling on third-class carriage 873 was bent. The next carriage was a Midland six-wheeled composite No. 605. The whole of the wheels were off the rails, the near-side wheels being between the rails and the tunnel wall, and the off-side wheels in the 4-ft. space. The leading and trailing axle-boxes on the off-side, and the leading and centre axle-boxes on the near side, were broken. The tyres of all the wheels were bruised. One triangular cross-bar and two step-irons were bent, and the trailing off-side axle-guard spread, the bridle of the same being broken. The next vehicle was Midland guard's van No. 526. All four wheels were off the rails. The near-side wheels were between the up line and the tunnel wall, and the off-side wheels in the 4-ft. space. The tyres of both pairs of wheels were bruised; four axle-boxes, one corner pillar, one panel, four pieces of moulding, one top projection panel, one projection light, one step-iron, and two step-boards broken; one triangular crossbar and two shackles of the screw-coupling bent, two axle-guards spread, roof moulding and one corner board badly damaged, two end panels split, and one stay-plate bruised. This van had come in contact with the side of the tunnel. M.S.J.S. bogie composite carriage No. 6 came next. One door-light and one quarter-light on the nearside were broken, and one screw-coupling shackle bent. This carriage remained on the rails. The rear vehicle was a Midland guard's van No. 126. Both pairs of wheels were bruised. The two near-side axle-boxes and the trailing off-side axle-box were broken, and the leading near-side axle-guard spread. Two triangular crossbars and one step-iron were bent. All four wheels were off the rails, the off-side wheels in the 6-ft. space and the near-side wheels in the 4-ft. space. All the broken pieces of the axle-boxes were lying alongside the train. I went back to the Bristol end of the tunnel and could find nothing which could have thrown the train off. There were several bits of old iron and bolts, which appeared to have been among the ballast for some time, as they were much corroded. The sweepings of the shops, and ashes, &c. are sent out in a ballast waggon and taken away by the permanent-way department, and no doubt there are often bits of iron among the sweepings. I examined all the vehicles in the tunnel and afterwards at Bristol. There was no bent axle and no broken spring, and all the wheels were to gauge, although the flanges of those which had been off the rails were bruised.

W. L. Meredith said: I am district engineer in charge of the western district. I was at the scene of the accident about 35 minutes after it happened, and made a careful examination of the road. I hand in a plan showing a detail of the marks I found upon the permanent-ways, from which it would appear that the pair of wheels left the rails 1,625 feet from the western end of the tunnel. For about 120 feet this seems to have been the only pair off the rails. The line at the first mark was in good condition and proper gauge. About 20 feet east of the first mark the up line was slewed about 6½ inches towards the tunnel wall, and about 30 feet further it was slewed about 5 inches. East of this the up line was drawn in towards the down line. Behind the first mark I could find nothing to account for a wheel leaving the rails, but I found some skidding marks on the top of the rail. I have formed a theory from the presence of these skidding marks (which I have marked upon the the plan) that there was a sudden application of the brake which caused the leading wheels of carriage No. 855 to leave the rails. That application appears to have been removed, and in a short space the brake seems to have been applied again by (I imagine) the disconnection of the same pipe which was found to have parted after the accident. The second skidding marks were at a distance from the first marks corresponding to the distance from the leading pair of wheels of No. 855 carriage to carriage No. 605, *i.e.*, 168 to 179 feet. I believe the speed of the train to have been very high, nearly 70 miles an hour, judging from the time taken to run from Yate according to the time taken there and the time noted by ganger Hallett. Inspector Jones has correctly stated what is the practice in the district as regards the withdrawal of flagmen.—(Note.—*This witness treats the tunnel as lying east and west, while others treat it as lying north and south.*)

Conclusion.

From the foregoing evidence it appears that during the five days between Sunday the 18th and Thursday the 23rd July, inclusive, the up line through Wickwar was relaid, a proper notice having been issued to drivers, and flagmen being stationed according to regulations to ensure that the speed of trains was reduced while the relaying operations were in progress; but that on July 27th the inspector in charge of the district, having satisfied himself that the new rails were in proper line and the sleepers well packed, withdrew the flagmen, although there was no top ballast whatever on the line, and from that time drivers were entitled to run, and probably did run, at the usual speed through the tunnel on the relaid up line.

No evil result followed this discontinuance of cautious running until Tuesday, August 1st, when the 8.5 a.m. passenger train from Bristol was running through the tunnel at its usual speed, probably nearly 50 miles an hour, and when, after reaching a point 542 yards inside the tunnel, a pair of wheels left the rails, and so disturbed them that three other vehicles, not, however, consecutive vehicles, also ran off before the train was brought to a stand.

Judging from the marks upon the permanent-way it is evident that the first pair of wheels to leave the rails was the leading pair on a composite carriage, which was the second vehicle behind the engine, and the track of these wheels can be closely traced, running with one wheel in the 4-ft. way of the up line, and with the other wheel outside the left rail of this line, for the whole distance of 568 yards, to the point where this vehicle stood when the train was brought to a stand.

It would appear from the distance run that the driver did not at once become aware of what had happened, but when he did he took proper steps to stop his train.

One vehicle only, the rear van, ran off towards the centre of the tunnel, the others running off towards the wall of the tunnel, which was slightly struck by the top leading corner of one of them—a brake-van.

The line was true to gauge and had a level top, but after the accident it was found to have been slewed to one side or the other at several places, although at the exact spot where there were the first marks of a pair of wheels running off over the left rail, the 6-ft. interval between the lines was correct.

There is no doubt in my mind that the accident was due to the entire absence of any top ballast, so that the sleepers, which were merely resting on the surface of the bottom ballast, although properly packed, were liable to move laterally when subjected to pressure, one way or the other, from the oscillation of a heavy train. This movement was evidently very slight, for if it had been considerable the engine and the whole train would probably have left the rails, and a very serious accident would have resulted.

It was most unwise of inspector Jones, although not in contravention of any rule of the Company, to withdraw the flagmen before the line was properly provided with top ballast, and the ends of the sleepers so boxed up that no lateral movement could take place, but what is the most serious aspect of this case is that the action of the inspector seems to have been in accordance with the regular practice in the western district of the Midland Railway.

The narrow escape from a very serious disaster will, I have no doubt, lead the Company to issue stringent orders to ensure that in no case shall flagmen, who have been placed out to caution drivers during relaying operations, be withdrawn, until the relaid line is complete in every respect.

I have, &c.,

F. A. Marindin,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Damage to Rolling-Stock.

Passenger van No. 239.—Not damaged.

Composite No. 555 (off the rails with one pair of wheels) —One axle-box broken; tyres of one pair of wheels bruised.

Composite No. 60.—Not damaged.

Third-class No. 1098.—Not damaged.

Third-class No. 941.—Not damaged.

Third-class No. 873.—One shackle bent.

Composite No. 605 (off the rails).—Tyres of wheels bruised; four axle-boxes broken; one triangular cross-bar bent; two step-irons bent; one axle-guard strained; one axle-guard bridle broken.

Passenger van No. 526 (off the rails).—Tyres of wheels bruised; four axle-boxes broken; one corner-pillar broken; one panel broken; two pieces of moulding broken; one projection panel broken, and two pieces of the moulding broken; one projection light broken; one step-iron broken; two step-boards broken; one triangular cross-bar bent; two shackles bent; two axle-guards strained and bolts broken; roof-moulding broken; one corner-board broken two end-panels split; one end stay-plate bruised.

M.S.J.S. bogie composite No. 6.—One door-light broken; one quarter-light broken; one shackle bent.

Passenger van No. 126 (off the rails).—Wheels bruised; three axle-boxes broken; one step-board broken; one axle-guard strained and bolt broken; two triangular cross-bars bent; one step-iron bent.

Damage to Permanent-Way.

814 50-lb. chairs broken.

370 9 feet by 10 inches by 5 inches creosoted sleepers damaged.

Printed copies of the above Report were sent to the Company on the 4th September.

MIDLAND AND SOUTH-WESTERN JUNCTION RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
9th November 1893.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 12th October, the result of my enquiry into the collision that occurred on the 23rd September, at Ludgershall station, on the Midland and South-Western Junction Railway.

On this occasion while the 9.5 p.m. excursion train from Andover to Cheltenham was standing at the up platform at Ludgershall station waiting for the 5.31 p.m.

(ordinary) train from Cheltenham to Andover to pass, it was run into by the latter train, which failed to stop at the down home-signal, although this signal was at danger.

One passenger is reported to have complained of slight injuries.

The excursion train consisted of a six-wheels coupled tender-engine and seven passenger vehicles, including two third-class brake carriages. It was fitted with the automatic vacuum brake, and there was a steam-brake on the engine and tender which was applied by the same handle as the vacuum brake.

The ordinary train consisted of a four-wheeled coupled tender-engine, and eight vehicles, marshalled as follows: engine, tender, four milk vans, two six-wheeled carriages, one goods truck, and one third-class brake-carriage. The engine and train were fitted, as before, with the steam and vacuum brakes, which were applied by one and the same lever.

The leading buffers of both engines, and one draw-bar hook on the front carriage of the excursion train were broken by the collision. No other damage to rolling-stock or permanent-way occurred.

Description.

The Midland and South-Western Junction Railway is a single line, worked on the train tablet system, and there is a passing loop with up and down platforms at Ludgershall. The loop points at each end are provided with the proper safety appliances, and are interlocked with the signals, but the locking is such that before the home-signal in either direction can be lowered to admit a train into the loop, the points at both ends of the loop must be set so as to form a through road for the incoming train.

The station is approached from the direction of Cheltenham on a falling gradient of 1 in 100, extending for a distance of 682 yards, the line is level for a distance of 462 yards through the station, and it then falls again at an inclination of 1 in 100 towards Andover.

The following distances should be noted:—

From the down distant-signal to the down home-signal - -	757 yards.
From the down home-signal to the down starting signal - -	227 „
From the down home-signal to the facing loop-points - -	12 „
From the down home-signal to the point of collision - -	78 „

The following are the regulations in force on this line under which signalmen may allow trains to approach stations, either with the "Line clear," or with "Section clear, but station blocked," block telegraph-signals:—

"7. Except where special instructions to the contrary are issued, the 'Is line clear?' signal may be acknowledged, and permission given for a tablet to be withdrawn when the line to the starting signal applicable to the train that is about to approach is clear and free from obstruction, and the points over which it has to pass have been placed in the proper position, and after the 'Is line clear?' signal has been acknowledged, and permission has been given for a tablet to be withdrawn, no obstruction of the line within the starting signal applicable to the train that is about to approach must be allowed, and the points over which it has to pass must not be moved until the train has passed or been brought to a stand, or the signal, 'Signal given in error, train last signalled not coming,' has been received from the tablet station in the rear.

"Except where special instructions to the contrary are issued, permission may be given in accordance with the 'Section clear and station or junction blocked' signal, for a train to approach when the line to the home-signal applicable to the train that is about to approach is clear and free from obstruction.

"19. When the line is clear to the home signal, and it is necessary for a train to be be allowed to approach a tablet station cautiously, in consequence of an obstruction existing ahead of the home-signal, or from any other cause, the 'Is line clear?' signal must not be acknowledged, but the signal, 'Section clear and station or junction blocked (13 beats), must be given, which signal must be acknowledged, and when this has been done, permission may be given to the tablet station in the rear for a tablet to be withdrawn. The signalman receiving such signal must stop the approaching train, and, when handing the tablet to the driver, instruct him to proceed cautiously to the tablet station from which the signal was received. When some time is likely to elapse before the train for which the 'Is line clear?' signal has been sent will be ready to enter the section, the 'Section clear and station or junction blocked' signal

must not be acknowledged; but when the train is ready to enter the section, and before it is allowed to do so, the 'Is line clear?' signal must be again sent so as to give the signalman at the tablet station in advance an opportunity of acknowledging it, if the circumstances are so altered as to admit of his doing so."

Evidence.

William Ernest Chitty, stationmaster at Ludgershall, states: While the 9.15 p.m. excursion train *ex* Andover was standing in Ludgershall station waiting for the 5.31 p.m. mixed train from Cheltenham to pass it, it was run into by the 5.31 train. The excursion train was running to time, and it had been standing in the station about two minutes. The mixed train was 40 minutes late. It is due here at 8.43 and it arrived at 9.21 p.m. It was not intended to pass the excursion train here but at Andover, and this arrangement was shown in the special train notice. The notice was a written one. Every one on the station had a copy. The points and signals at Ludgershall are so interlocked that the home-signal, in either direction, cannot be lowered until the loop points at both ends have been set for the arriving train to leave the station. I am not sure whether the signalman (James Smith) had placed his up home-signal to danger behind the excursion train before he left his box to take the tablet from the driver. He asked me to ascertain whether the up train was standing clear of the loop points, so as to allow the down train to come in. I told him the train was standing clear. He then started off to his box to let the down train in, when the latter arrived, and running past the home-signal collided with the excursion train. I cannot say what speed the down train was running at. As a rule the down train does not pass any other train here. It generally runs straight into the platform, but it is timed to stop at Ludgershall. There is a rule in the Block Telegraph Regulation (No. 19) which renders it compulsory on the signalman, when two trains are approaching the station from opposite directions at the same time, to give the "Section clear but station blocked" signal to that block, or tablet station from which he accepts the second of the two trains. I cannot say for certain whether the signalman acted on this rule on this occasion, but I think it doubtful. I did not ask the signalman as to this. I warned the signalman that the enquiry was to be held to-day and requested him to be present, and he refused to come. He has been at work regularly up to the 19th instant. His hours of work were on one week from 7.15 a.m. to 5.15 a.m., with 1½ hours for meals, and the next week 9.30 a.m. till 9 p.m. with the same interval for meals. He had been given notice to leave subsequent to the collision and the notice expired on Wednesday, the 18th instant. But on appeal through me to the general manager his case was reconsidered, and he was informed that he would be retained in the Company's service, but not as a signalman, and that he would be stationed at some other place. He came to work on Thursday on these conditions, but on Friday he absented himself. I saw him last night and again asked him to be present at the enquiry, and again he refused. After the collision both trains were able to leave the station and go on with their work in the usual course.

William Annalls, driver, states: I have been in the Company's service two years last June, before which I was in the London and South-Western Railway Company's service. I have been six or seven years driver. On the 23rd September I came on duty at 1.30 p.m., having gone off duty at 1.30 p.m. on the 22nd September. On the 23rd I came on to work for nine hours, but I did not come off duty till 10.45 p.m. On 23rd September I was working the 5.31 p.m. train ex Cheltenham. I left Cheltenham at 5.59, *i.e.* 28 minutes late. There are 15 stops between Cheltenham and Ludgershall, and I lost time on the journey and arrived at Ludgershall 38 minutes late. On approaching Ludgershall I found the distant-signal at danger. I had shut off steam before sighting the distant-signal. I had my automatic brake partly on before reaching the signal. I sighted the home-signal soon after passing the distant, and that was at danger also, and I prepared to stop at it. I applied the brake full power before we reached the bridge, which is 112 yards outside the home-signal, and the engine wheels then picked up, and I ran past the home-signal at about 15 miles an hour, and through the loop-points, and collided with the up train on the up line. The buffers on my engine were broken, but no other damage was done to my engine. Neither I nor my mate were injured in any way. By that time I was going very steady, and did not expect to touch the other train. I gave the wheels sand, and I also reversed the engine, and the wheels went round in the contrary direction. I work the train every other day. I do not often have to pass anything at Ludgershall. When the home-signal is against me I am in the habit of stopping at it. Sometimes I have been stopped at the home-signal, and then hand-signalled into the station by a green light. I have never run past the home-signal at danger without stopping. I know how the points are locked at each end of the loop. I fully intended to stop at the home-signal. My engine was No. 189 tender-engine, with four wheels coupled, and six-wheeled tender fitted with steam and automatic vacuum-brake. The steam-brake worked blocks on the four-coupled wheels and six-tender wheels. Both brakes are applied simultaneously by the same lever. I do not know whether every vehicle on the train was fitted with brake block or not. I believe one or two were fitted only with the pipe. I believe we had three vehicles on on leaving Cheltenham, and we picked up more on the way. The guard did not advise me on the journey as to how many vehicles had been attached, and as to whether the continuous brake was applicable to them or not. After the wheels picked up I did not whistle for the guard's brake, and there was no time for the fireman to apply the hand-brake. The train was lighter than usual. It was a greasy night. I was unable to get more than 15 inches of vacuum all that journey; 18 inches is our regular vacuum. I did not call the guard's attention to the deficiency of vacuum as I had no difficulty in stopping at the intermediate places. I should think I passed the distant-signal at about 20 miles an hour. The wheels picked up several times previously on the same journey. This engine is not my regular engine. My engine is the same class. It was under repairs.

George Portsmouth, fireman, states: I have been in the Company's service two years last March, and I have been fireman since January. For the past two months I have been firing for driver Annalls. On the 22nd and 23rd September my hours of duty were the same as my driver's. I corroborate my driver's statement in all respects.

E. Radford, guard, states: I have been in the Company's service two years and three months, and I have been eight months guard. Before that I was with the Great Western Railway for six years as porter. On the 23rd September I came on duty at 5 p.m. at Cheltenham. I was due to book off at 1 a.m., and I got away about that time. On the 22nd September I came on duty at 5.30 p.m. and left duty at 1.30 a.m. on

23rd. The 5.31 p.m. train ex Cheltenham was 28 minutes late leaving. The train then consisted of engine and tender and six vehicles, including the brake-vans, marshalled as follows:—Third-class brake, third-class, two composites, third-class, and third-class brake-van. On leaving Cheltenham the train was fitted throughout with the continuous brake, and it was in working order. I tested it before leaving Cheltenham. We then had 17 inches of vacuum. At Cirencester we picked up a goods truck and put it in front of the last van, and in this way the automatic-brake was cut off from the van. At Cricklade, and at Rusheyplatt we picked up two milk-vans. At Swindon we picked up two milk-vans and a horse-box and carriage-truck, leaving behind us there two carriages and a third-class brake. At Collingbourne we detached the horse-box and carriage-truck, and the train then consisted of four milk-vans, two six-wheeled composites, one goods truck and one third-class brake. Two of the milk-vans were fitted with pipes only, and two with brake-blocks. The composites were fitted with blocks. The goods truck interrupted the continuity of the vacuum-brake. I told the driver the composition of the train at Cheltenham. I told him at Cirencester there was a goods truck on and it destroyed the vacuum in the van. I did not tell him about the milk-vans not having in all cases blocks on the wheels. On approaching Ludgershall I could not see the distant-signal. There was no light in it. It was a dark night. I did not see the home-signal either. I thought I saw it, but it was the head-light of the engine of the up train. I applied the hand-brake as soon as I saw the red light. We were then running about four or five miles an hour. I had applied the brake one turn when I reached the top of the incline according to the Rule No. 211.

William Annalls, driver (recalled): The distant-signal light was not lighted, and I did not see the signal till I got close to it, and I then just caught sight of the arm. The home signal was showing a good light. It was a darkish night.

George Swatton, signalman, states: I have been in the Company's service two years last September, and I am porter-signalman at Collingbourne. On 23rd September I came on duty at 10.30 a.m. for a 12 hours' spell. I remember the 5.31 train ex Cheltenham passing me on that day. I gave four beats on the bell to the man at Ludgershall to ask for the tablet. He gave four beats in reply and released the tablet. If he had given "Section clear but station blocked" signal he would have given 13 beats before releasing the tablet. I am sure that he did not give me 13 beats. Had he done so I should have warned the driver.

Inspector Morris states; I was in the 5.31 p.m. train from Cheltenham, and I noticed that the distant-signal lamp was not lighted. The four milk vans on the train belonged to the South Western Company, and they were all fitted with brake blocks.

George Parfitt, driver, states: I was driver of 9.5 p.m. excursion train from Andover, and about four minutes after arriving at Ludgershall my engine was run into by the 5.31 p.m. train from Cheltenham. The other train struck my engine at about three or four miles an hour. My buffer castings were broken. My headlights were white and green, and they were both burning.

Conclusion.

This collision was fortunately unattended by any serious consequences, but several irregularities in the working of the line were brought to light in the course of my enquiry. The circumstances under which it occurred appears to be as follows: The 9.5 p.m. excursion train from Andover to Cheltenham left the former place at the right time; and was detained at Ludgershall in order to allow the 5.31 p.m. ordinary train from Cheltenham to Andover to pass it. This arrangement became necessary in consequence of the latter train being 38 minutes late. Had it been running to time it would have reached Andover at 9 p.m., five minutes before the excursion train was due to leave, and the crossing of these two trains would not have taken place at Ludgershall. In order to enable the up home-signal to be lowered for the excursion train to run into the station, it was necessary for the signalman to set the points at both ends of the loop for a through road on the up line, and having done this and admitted the train into the station, porter-signalman James Smith appears to have gone to the platform to assist in the work of the train and to receive the train tablet from the driver. Owing to Smith's non-attendance at the enquiry, there is no evidence to show whether before descending to the platform from the signal-cabin he placed the home-signal to danger behind the train, but it is certain that whether he did so or not, he did not reverse the points at the north-end of the loop, so as to make the road for the train from Cheltenham. The evidence of station-master Chitty and of signalman Swatton at Collingbourne, proves that Smith was aware that the down train was approaching, and the interlocking of the levers in the cabin makes it equally certain that the down home and distant signal were at danger. Smith having received the tablet from driver Parfitt and ascertained that the down excursion train was not fouling the points at the north-end of the loop, returned to his cabin to set the road and lower the signals for the down train, but before he had time to do so the latter arrived, and passing the down home-signal at danger it ran through the loop points, which were still in position for the up line, and collided with the excursion train which was standing in the station on that line.

It is clear that the collision was chiefly due to the failure of driver Annalls to pull up his train at the down home-signal, which he acknowledges was at danger at the time he passed it. He accounts for this by saying that when he applied his continuous-

brake 112 yards outside the home-signal, the wheels of his engine skidded owing to the rails being greasy, and the brake therefore did not have the proper effect. He admits that he ran past the signal at a speed of 15 miles an hour, and that he was still travelling at what he calls a "steady" pace when he collided with the other engine. Even if the driver's version of the occurrence be accepted as correct, there appears to be no valid excuse for his having run past the signal. The fact that the distant-signal was at danger warned him that he might expect to find the home-signal also against him, and had he at once taken the prescribed steps to bring his train under control, there is no reason why he should have still been running at 15 miles an hour when he reached the home-signal. It seems however far more probable, that Annalls being in ignorance of the fact that he had to pass the excursion train at Ludgershall, (the original intention, as shown upon the special train notice, being that the excursion should leave Andover after the arrival of the down train) and being also 38 minutes late, allowed his train to run freely down the incline of 1 in 100 approaching the station, expecting every moment that the home-signal would be lowered for him, so that he would run into the station without stopping. When, however, he was within 112 yards of the signal and he found it remained at danger he applied his brake full power in the endeavour to stop before reaching the signal, but the speed being too great it is hardly surprising that he failed to do so. Be this as it may, there is a space of 757 yards between the distant and home signals, and in spite of the gradient the driver could undoubtedly have brought his train to rest in this distance had he acted with ordinary care, and in accordance with the rules. Greasy rails cannot be accepted as relieving a driver of any responsibility, for these are constantly met with in this country, and a careful man knows how to make allowance for them. I am therefore compelled to hold driver Annalls responsible for the collision, inasmuch as he failed to bring his train under proper control, to enable him to stop at the home signal, which, from the time he passed the distant-signal, he knew was at danger. He had been on duty seven hours and 50 minutes at the time of the collision.

Porter-signalman James Smith appears to have neglected to obey the regulations already quoted, which rendered it obligatory on him under the circumstances to give the "Section clear but station blocked" signal in place of the "Line clear" signal on the block telegraph instrument to the signalman at Collingbourne, when he gave the latter permission for the down train to approach Ludgershall. Had he placed the home-signal to danger behind the up train and reversed the points at the north end so as to set the road through the station for the down road, he might, under Rule 7, have given "Line clear" to Collingbourne for the down train. Or had he, after giving "Line clear" for the down train, reversed the loop-points as soon as the up train reached the platform no harm would have resulted. But so long as the loop points were set for the up line, he had no authority to allow a down train to approach his station except under the warning (Section clear but station blocked) arrangement; the receipt of which intimation at Collingbourne would have been conveyed to driver Annalls, and would, it is hoped, have caused him to approach Ludgershall with more care. Instead of carrying out the regulations, signalman James Smith seems to have given "Line clear" to two trains from opposite directions at the same time, and to have set the road through the station and lowered the signals for one of them, viz., the up train, the consequence being that if either train overran the point at which it was to stop, a collision was inevitable. Smith must be regarded as severely to blame for his neglect of the regulations, as it is possible that if driver Annalls had received the warning at Collingbourne that Ludgershall station was blocked, he might have taken some more pains to bring his train to a stand outside the home-signal at the latter place.

From the evidence of the driver and of inspector Morris it further appears that Smith had not lighted the lamp of the down distant-signal. Although this omission did not mislead driver Annalls, as he acknowledges that he caught sight of the signal-arm as he passed it, it constitutes a grave offence. The safety of trains depends upon the signals, and a man, who to save himself the trouble of walking a few hundred yards, would deliberately leave a signal-lamp unlighted, is, to say the least, unfit for the position of signalman. It might be argued that both these errors were due to accident or momentary forgetfulness, or that the lamp having been lighted subsequently went out, but as signalman Smith refused to attend the inquiry (though twice warned by the station-master) and to give evidence, I am unable to take such a lenient view of his offence. He is said to have been on duty for 10 hours and 35 minutes, at the time of the collision. Under rules 113 and 114 (General Rule Book) station-masters are responsible that signalmen perform their duties in an efficient manner, and that the

signal-lamps are lighted at the proper hour, and station-master Chitty must therefore be held to blame for his want of supervision on the evening in question.

When the train started from Cheltenham it consisted of passenger vehicles only, but on the journey it picked up four milk vans and a goods truck, and detached two passenger carriages and a third-class brake, so that at the time of the collision it consisted of four milk vans, two composite carriages, one goods truck and a third-class brake. The goods truck was in front of and next to the brake-carriage, and the train therefore became a mixed train, and as this 5.31 p.m. train appears to have taken the place of the 5.10 p.m. train, which was sanctioned by the Board of Trade in October 1892 to be run as a mixed train, there is no objection to this arrangement, though it may be remarked that in the working time book of the Company this train is described as a passenger train.

There is some doubt as to whether all the milk vans were fitted with the continuous brake or not. The driver was ignorant of the composition on leaving Cheltenham, and says that he neither received nor sought for information on the journey as to the number of vehicles or trucks picked up or detached at the various stations. Guard Radford says that two of the milk vans had brake-pipes only and no blocks, but inspector Morris, who was in the train, states that all four milk vans had brake-blocks fitted to them. Guard Radford also asserted that he informed the driver of the changes made at the different stations in the marshalling and composition of the train. But this man gave his evidence in such a manner as to render it impossible for me to place any reliance on his statements. I therefore prefer to accept the driver's account, and both he and the guard are blameworthy for having failed to comply with rules 235A and 267A, which lay down that when any vehicles are attached or detached on the journey, the guards are to inform the drivers, and the drivers are to ascertain from the guards, to what extent the attaching and detaching of such vehicles will interfere with the working of the continuous brake on the whole or a portion of the train.

Guard Radford had been on duty for 4 hours and 20 minutes.

Looking at all the facts of the case, this collision must be held to betray a laxity of discipline and a disregard of rules, to which the earnest attention of the Company should be called.

The interlocking of the signals with the points at each end of the loops at the stations on this line is not altogether in accordance with modern practice. As already explained, the home-signals in each direction are interlocked with both the facing and trailing points, so that, when two trains have to pass each other at a station, and one or other of them overruns the signal, a collision is rendered almost inevitable.

The more recent arrangement is to interlock the home-signals with the facing loop-points only, and the starting-signals with the trailing-points, in which case the facing-points would be normally in position for the proper (*i.e.*, left-hand) road for an incoming train, and the chances of a collision owing to a train overrunning the signals would be much reduced. I would therefore recommend that this alteration in the locking be made as soon as possible at all the stations on this railway.

I have, &c.,

H. A. YORKE,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

Printed copies of the above Report were sent to the Company on the 24th November.

NORTH BRITISH RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, S.W.,
29th July 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 10th instant, the result of my inquiry into the circumstances attending a collision which took place on the 7th instant at Bridgeton Cross station on the North British Railway.

In this case the 8.32 a.m. up train from Craigendoran to Bridgeton Cross, when approaching the latter station at 9.25 a.m., came into collision with the 9.20 a.m. down train from Bridgeton Cross to Torrance, which had started at 9.24 a.m. from No. 1 platform line on the up side of the station, and was crossing from the up line

to the down line through a facing cross-over road, near the mouth of the tunnel which lies between Bridgeton Cross and Gallowgate Central stations.

The right-hand leading corners of the two engines met at the fouling point of the crossing, the speed of the Craigendoran train being about eight miles an hour and that of the Torrance train about five miles an hour.

The leading-wheels of the Torrance engine left the rails, the bogie of the Craigendoran engine was damaged and tilted up, and the two leading vehicles in each of the trains were slightly telescoped.

There were only three paasengers in the Torrance train, and none of these were injured, but five passengers in the Craigendoran train, the driver and fireman of this train, and the driver of the Torrance train were injured.

A return of the damage to the rolling stock is appended.

The trains were made up as follows:—

Craigendoran Train.—Tank engine (running chimney in front), one third-class brake, two third-class, five first-class, and one third-class carriages, and brake-van.

Torrance Train.—Tank engine (running chimney in front), one third-class brake, one third-class, three first-class, two third-class, and one third-class brake carriages.

Both trains were fitted throughout with the Westinghouse brake.

Description.

Bridgeton Cross is a terminal station at the end of a double line, and it has four platform lines all signalled for both arrival and departure, No. 1 platform line being on the east or up side of the station. The outermost cross-over road through which a down train, starting from No. 1 line, must cross from the up to the down line is 225 yards north of the starting-signal on the platform, and just at the mouth of a tunnel which extends for a distance of 210 yards to Gallowgate Central station, from which station to Bridgeton Cross, a distance of about 450 yards, the line falls on a gradient of 1 in 210, and curves slightly to the right. Bridgeton Cross station signal-cabin, which contains 61 working levers, is about half way between the platform and the tunnel mouth, and is on the east side of the line.

The signals at Gallowgate Central station are worked from a cabin north of the station, called Bridgeton Cross south junction cabin, and this cabin contains 17 working levers.

The only signals to which it is necessary to refer are—

1. Bridgeton Cross south junction, or Gallowgate Central up advance starting-signal, which is close to the north end of the tunnel, and is upon a bridge carrying four signals, the three arms below the starting-signal arm being the distant-signals for different lines at Bridgeton Cross.

This advance-signal is worked from Bridgeton Cross station junction cabin, but, as it is out of sight from that cabin, it is electrically repeated, and there is a lever on the platform which slots the up junction home-signals, and is not pulled over until a train has passed into the tunnel. When pulled an indicator in the signal-cabin is also actuated.

2. Bridgeton Cross up home-signal, which is a disc-signal 24 yards inside the south end of the tunnel, and which can, when the tunnel is clear, be seen from an engine immediately after passing Gallowgate Central up advance starting-signal.

3. Bridgeton Cross up leading-signals, which are five signals upon a gantry on the station side of the point of collision, and 43 yards outside the tunnel. These signals can be seen from an approaching engine for a considerable distance before emerging from the tunnel, but only when this is clear of smoke and steam.

The following distances northward from the down starting-signal for No. 1 line should be noted:—

	Yards.
To signal-cabin	133
„ trailing-points on up line	215
„ down directing-signals	220
„ facing-points on up line leading to down line	228
„ point of collision	243
„ south end of tunnel	263
„ up home (disc) signal	287
„ north end of tunnel	473
„ Bridgeton Cross up distant-signals and Bridgeton Cross south junction, or Gallowgate Central up advance starting-signal on the south end of the platform at this station	482

Absolute block working is in force between Bridgeton Cross south junction and Bridgeton Cross station, and the signalman in the latter cabin is forbidden to accept an up train until he is in a position to set the points and lower the signals for it to enter one of the platform lines, thus locking all the conflicting points and signals.

Evidence taken 13*th July.*

Thomas Messenger states: I have been 16 years in the service, and station-master at Gallowgate Central station for a year. Before that I was a clerk in the superintendent's office. On the 7th instant I came on duty at 8.15 a.m. to work till 9 p.m. I have two hours off for meals. At about 9.20 a.m. I was on duty on the up platform when the 8.32 a.m. train from Craigendoran, due at 9.15, arrived. It stopped for about a minute, or a minute and a half, and when the station work was done I gave a signal to the guard, and he gave the usual signal with whistle and green flag to the driver, who started at once. I could not see the starting-signal from where I stood on account of the smoke from the engine. There was nothing that I am aware of which could have prevented the driver from seeing it. As soon as the train had disappeared into the tunnel, porter Robertson pulled off the lever working slots on the junction up home-signals, and an indicating arm in Bridgeton Cross south junction cabin. The order is that this lever is not to be pulled off until a train has passed the advance starting-signal. As soon as this lever was pulled, the signalman in Bridgeton Cross south junction cabin ran down his stairs and shouted "Is the train away?" I replied "Yes," and he said it had gone away without the proper signals. Simultaneously with that I heard the crash of the collision. I do not remember any previous instance of a train going away against the signal at this station. The first time I saw the up advance starting-signal, at that time, was after the train had passed it. It was standing at danger with the arm horizontal, and not drooping. Porter Robertson, who is now in hospital, reported that it was at danger when the train arrived, and was not pulled off. It was a clear fine morning. The train was heavily loaded. The 9.16 a.m. train from St. Enoch to Bridgeton Cross had passed a minute or two previously on the up line. The 9.15 a.m. train from Bridgeton Cross to Milngavie had passed on the down line a few minutes before. No doubt, therefore, there was a good deal of smoke and steam in the tunnel.

Patrick Morgan states: I have been about 12 years in the service, a signalman for 11 years, and in Bridgeton Cross south junction cabin for about a year. On the 7th instant I came on duty at 4.30 a.m. to work till 2 p.m. I had come off duty at 2 p.m. on the previous day. It is a 10-hour box, and is shut from about 11 p.m. till 4.30 a.m. The 9.16 a.m. up train from St. Enoch to Bridgeton Cross passed into Gallowgate Central at 9.21 a.m., being due at 9.20 a.m., and after it had left, the indicating arm in my cabin, worked from the platform, was pulled over. I gave "Is line clear" signal for this train to Bridgeton Cross at 9.20, and it was accepted at once. I gave the "On line" signal just before it arrived. I got the train out of section for it at 9.23. The 9.17 a.m. down train from Bridgeton Cross to Milngavie passed at 9.22 a.m. The next up train was the 8.32 a.m. train from Craigendoran, due at Gallowgate Central station at 9.15 a.m. The following are the block signals recorded for this train:—

	a.m.
"Is line clear," received from Bridgeton Cross north junction, and not accepted	9.18
"Is line clear," received and accepted	9.20
"Train entering section" received	9.20
Arrived	9.20
"Is line clear," offered to Bridgeton Cross signal, refused	9.20

The train having arrived at 9.20 a.m. passed on to the station, and about a minute afterwards the arm indicating that the train had started, which is worked from the platform, was pulled off. I at once ran down my stairs and shouted to the station, asking if the train had started. On hearing that it had left I said that it had started against the signals. I had lowered the up advance starting-signal for the Glasgow and South-Western train. I had restored it to danger. I am quite certain of this. The electrical repeater in my cabin showed that it had gone to danger. I did not hear the crash of the collision. I wired on the speaking instrument to Bridgeton Cross station cabin as soon as I heard that the train had started from Gallowgate Central. I got no answer. I believe the collision occurred just as I was wiring. We do not accept up trains until the indicating lever in the cabin is pulled for the preceding train.

John Smith states: I have been over seven years in the service, a signalman for over six years, and in Bridgeton Cross station cabin for over a year. On the 7th instant I came on duty at 4.55 a.m. to work till 2 p.m., having left duty on the previous day at 2 p.m. The cabin is closed soon after 11 p.m. till about 5 a.m. It was a fine morning. The 8.16 a.m. train from St. Enoch was offered to me at 9.20 a.m., and accepted. It was given "on line" at 9.20. It arrived at 9.24, being due at 9.22, and I gave the "Train out of section" for it at 9.24 a.m. The 8.32 a.m. up train from Craigendoran, due at 9.18, was offered at 9.24, but not accepted, because I had a train ready to start from No. 1 platform, and this train had to cross the up line. The order is not to accept any up train from Bridgeton Cross south junction unless the road can be made, and the signals lowered for it to run into one of the platform lines. I kept all my up signals at danger. At 9.24 I made the road and lowered the signals for the 9.20 a.m. down train for Torrance to leave No. 1 platform. In doing so I had to pull over, among other levers, No. 66, working a cross-over road from the up to down line, Nos. 48 and 52, working another cross-over road from the platform line to the up line, and these levers lock all my up signal levers. I am sure that the signal-lamp in my outer up home-signal, which is a disc-signal in the tunnel, was burning properly. I could see it. The Torrance train started at 9.24 a.m., and passed my cabin at 9.25 a.m., running slowly—at about six miles an hour, I should say. Trains always go steadily through these cross-over roads. The first I knew of anything being wrong was from hearing the crash of the collision. I did not see or hear the up train approaching, and could not see much in that direction on account of the smoke and steam from the Torrance train. The tail of this train had just passed my starting-signal when the collision occurred. I cannot say whether it was driven back much or not. I did not leave my cabin, and cannot speak as to the result of the collision. There has been no previous instance of a train coming in against signals at this station that I know of. The up train from St. Enoch arrived at 9.24, and the one before at 9.8. The 9.17 down train to Milngavie left at 9.17, and was cleared at 9.22. There was no shunting in the tunnel between 9.17 and 9.22.

George Trotter, states: I have been 36 years in the service, a driver for 30 years, and accustomed to drive on the Bridgeton Cross branch since it was opened in 1891. On the 7th July I came on duty

at Parkhead at 5.50 a.m to work till 7 p.m. I had left duty the day before at 2.30 p.m. after about 8¾ hours work. I have a long and a short day alternately, and am off on Sunday. My engine, No. 96, is an eight-wheeled tank engine, with a trailing bogie, and leading and driving wheels coupled. I arrived at Bridgeton Cross with the 8.5 a.m. train from Kilsyth soon after 9 a.m. I was then attached to the Torrance train on No. 1 platform line and started at about 9.25, five minutes late. I was running chimney in front, and had eight vehicles on. The whole train was fitted with a Westinghouse brake in good order. I started with all signals clear. I know nothing about any signals except my own, but I saw no others off. When I got near to the cross-over road points leading on to the down line, and when I was running at about six or eight miles an hour, I saw an engine coming out of the tunnel, running at a moderate speed. I do not think steam was on upon this engine, but am not sure. My engine was in steam. I shut off steam at once, applied the Westinghouse brake, and reversed my engine, and had checked the speed of the train considerably, when the leading end of my engine was struck on the right side by the engine of the Craigendoran train. I cannot say whether the speed of this train was much checked but it was not running very hard then. There was no whistling from either engine. I think there was a good deal of steam and smoke in the tunnel. I could not see the train at all until the engine came out of the tunnel. I was knocked off my engine and bruised and shaken. The leading wheels of my engine left the rails, and two of the carriages on my train next to the engine were telescoped. I do not think any of the Craigendoran train left the rails, but the bogie of the engine was badly damaged, and the two carriages next the engine were telescoped. My fireman jumped off first before the collision, and was not hurt. I do not think any person was injured in my train. There were very few passengers. It was a fine clear morning.

William Durie states: I have been 10 years in the service and four years a fireman. I was working with driver Trotter on the 6th and 7th July. I have nothing to add to his evidence or to correct in it.

William James Stewart states: I have been about 11½ years in the service and a guard for five years. On the 7th July I came on duty at 6.50 a.m. at Bridgeton Cross, to work till 8 p.m., but I would have been off duty from 11.11 till 5.12 p.m. These are my daily hours for the week. I was guard of the 9.20 a.m. train from Bridgeton Cross to Torrance. It was five minutes late in starting, due to another train being in front. It was made up as follows:—Tank-engine, one third-class brake carriage, one third-class, three first-class, two third-class, and one third-class brake, and was fitted throughout with the Westinghouse brake. There were only three passengers, who were in a carriage near the tail of the train. I was riding in the rear-brake compartment, and there was no other guard. The signals were off for my train. Just after my brake compartment had passed Bridgeton Cross station signal-cabin and we were running at about three miles an hour, I felt a shock, which I believe was from the sudden application of the brake, and then another one which threw me down in the van. I got up and got out, and I found my engine and the engine of an up train locked together in the crossing. The brake, third next the engine, had the trailing end lifted up and telescoped into the leading end of the carriage behind it. There was not much damage to the other vehicles in my train, except the breaking of five buffer-castings. No passenger was injured in my train.

William Davidson states: I have been 15 years in the service and a guard for eight years, and have worked on the Bridgeton Cross branch since it was opened. On the 7th July I came on duty at Bridgeton Cross at 6.10 a.m. to work till 6 p.m., except for two hours in the middle of the day, when I would have been booked off. Those were my daily hours for the week. I took the 6.10 a.m. train to Helensburgh, arriving at 7.29 a.m., and returned with another train leaving Craigendoran at 8.32 a.m. This train was made up as follows:—Tank-engine, running chimney in front, one third-class brake, two third-class, five first-class, one third-class and brake-van in rear, in which I was riding. They were all bogie carriages except the van and the third-class brake. There was no other guard. The whole train was fitted with the Westinghouse brake. We started five minutes late with a full train. We arrived at Gallowgate Central at 9.25, being due at 9.15. We had lost two minutes in running and two minutes waiting for signals at Queen Street. Most of the passengers got out at Queen Street, but there were still about 20 passengers in the train at Gallowgate Central. There were passengers in both the leading carriages. When the station work was done at Gallowgate I got a signal from the stationmaster or porter, and signalled to my driver to start, which he did at once. I did not see the up advance starting-signal, either before or after starting. I did not see the Bridgeton Cross up distant-signal. Before starting I was too far back along the platform to see these signals. After we started I was looking out on the platform side of my van and did not see the signals. I did not see either the up home-signal (the disc in the tunnel) or the up directing-signals on the bridge when approaching Bridgeton Cross station. There was steam and smoke in the tunnel. I was looking ahead, but did not see the signals. There was 75 lbs. pressure on the brake gauge in my van when we left Gallowgate Central station. I did not see whether the brake was applied at all after leaving Gallowgate Central. The first thing which called my attention to anything being wrong was a shock, which knocked me down. I do not know whether this was a shock from the sudden application of the brake or from the collision, but I believe it was the collision. I think our speed at the time was about five miles an hour. I got out at once and ran forward, and then back to Bridgeton Cross south junction signal-cabin. I think the leading-end of the engine of my train was off the rails. The trailing end of the brake carriage next the engine was tilted up and against the carriage behind it. Nearly all the passengers were out of the train before I got back to it, after going back to protect it, and I cannot speak as to the number who were injured. My driver was injured. I had no conversation with him about the accident. I saw him at Craigendoran and on the journey. He was quite sober and fit for work. The Westinghouse brake had worked properly on the journey.

Robert Richardson states: I have been ten years in the service, and a fireman for eight years. On the 7th July I came on duty at 7.45 a.m. at Helensborough to work till 8.20 p.m. I had left duty the day before at 5 p.m. after 11½ hours duty. I should have left duty at 1.38 p.m., had it not been for the engine running hot. I was fireman with driver John Rennie. We left Craigendoran with the 8.32 a.m. train for Bridgeton Cross. There were ten vehicles in the train, which was fitted throughout with the Westinghouse brake in good order, and the engine was running chimney in front. We arrived at Gallowgate Central a little late, having been seven minutes late on arriving at Queen Street. We were slowed at College advance-signal, or Bridgeton Cross north junction advance. I did not see the signals at Gallowgate Central, either when we arrived or when we started. I was putting on my injector when approaching Gallowgate, and was still at it, as it did not work properly, when we started. Immediately afterwards I got it to work properly. After entering the tunnel I was engaged in brushing up the foot-plate, which was dirty, and I did not see the Bridgeton Cross signals at all. I was

on the right side of the foot-plate, and my driver was on the other side. There was nothing that I know of to prevent my driver from seeing the signals, unless the tunnel was full of smoke or steam, but I cannot speak as to that as my head was down all the time. The first thing which called my attention to anything being wrong was the shock of the collision, which knocked me over on the foot-plate, and damaged me slightly on the side of the head. Steam was off, but I cannot say where it was shut off. The Westinghouse brake was not applied, and there was no whistling from my engine. My driver was injured, but was not thrown off the engine. He did not say anything to me as to the cause of the collision, but I do not think he saw the other engine until just before striking it. I think our speed at the time was about seven miles an hour.

Evidence taken 27th July.

John Rennie states: I have been 43 years in the service, and a driver since 1857. I have been accustomed to drive over the line to Bridgeton Cross since it was opened, and I know the signals well. The up home-signal for Bridgeton Cross station is a disc-signal inside the tunnel, and there are leading signals outside the tunnel nearer to the station. The up distant-signals from the station are lower arms on the post carrying the up advance-signal at Gallowgate Central station. These signals are just outside the east end of the tunnel. On the 7th instant I came on duty at Helensburgh at 7.30 a.m. to work till 8.50 p.m., with three hours off in two periods during the day. I had left duty at 6.30 p.m. the previous day, after 12 hours duty. I ought to have been off at 1.30 p.m., but my engine had been delayed owing to heating and I missed a train. My engine (No. 494) is a bogie tank-engine with leading bogie, and driving and trailing wheels coupled, fitted with the Westinghouse brake in good order. I was driver of the 8.32 a.m. train from Craigendoran to Bridgeton Cross, consisting of 10 vehicles, eight of which were bogie carriages. The whole train was fitted with the Westinghouse brake. All the wheels in the train had brake-blocks, except the bogie wheels of the engine and the centre pair of wheels of one six-wheeled carriage. We left Craigendoran five minutes late, and College station, the last stopping-place, six or seven minutes late. The advance-signal at College was on, and I had come nearly to a stand when it was lowered, and I proceeded. I passed the Bridgeton Cross south junction distant-signal at danger, but the home-signal was off, and I ran into the station. I ran as far forward as possible, and came to a stand right under the station advance starting-signal. I looked at this signal as I was running in, and I took it to be off, and also the distant-signal worked from Bridgeton Cross station. After the station work was done I got the usual signal from my guard to start, and I did not look up at the signals again, but started my train, believing that all was clear for me to run into Bridgeton Cross station. I went through the tunnel at a speed of eight or nine miles an hour, having shut off steam soon after starting. There was a great deal of steam and smoke in the tunnel, and I did not see the disc-signal in the tunnel. I was running chimney in front, and I was riding on the left side of the foot-plate. I had just gone across to the other side to look for the leading signal, when I saw the down train coming out and just in the act of crossing the line. It was then hardly an engine length from me, and I had no time even to apply my brake. My speed had not slackened much. I was thrown forward against the face-plate, and I was shaken a good deal and my lip was cut. My fireman was not much hurt, but was cut in the ear. My leading axle was bent and the wheels were lifted, but the engine did not leave the rails. It was a fine morning, but close. As I have said, I took the signals at Gallowgate to be off, but when I went back to inquire the signalman said positively that they were on, and I would not contradict him. My train was a very long one, and I knew that it would take all the platform to hold it, and that was my reason for running so far up. My fireman was firing and attending to the injector when approaching Gallowgate, and through the tunnel he was sweeping up the foot-plate.

Conclusion.

The above evidence shows clearly what was the cause of this collision, the consequences of which were less serious than might have been expected, seeing that both the meeting engines were in motion and running at some speed.

The Craigendoran train, which was a few minutes late, arriving at the up platform at Gallowgate Central station at 9.24 a.m., was offered on the block telegraph instrument from Bridgeton Cross south junction to Bridgeton Cross station, but was not accepted, and consequently the signalman in the former cabin states that he kept his up advance starting-signal at danger, while the up home and up distant signals worked from Bridgeton Cross station were certainly locked at danger by the position of the levers working the signals, which at that time were pulled over for the Torrance train to leave No. 1 platform line.

The driver of the Craigendoran train, upon receiving from his guard the usual signal that the station work was done, started his train and entered the tunnel, passing the advance starting-signal, and the Bridgeton Cross up distant-signals, at danger. Having done so, it is not very surprising that he failed to stop at the up home (disc) signal, which also was at danger and which he missed altogether, for there was no doubt there was a good deal of smoke and steam in the tunnel. Strictly speaking, it was his duty to stop his train if he did not see this signal, although, if the distant-signal had been off, as he thought it was, it would have been an indication that the home-signal also was off. He saw neither the directing-signals at Bridgeton Cross, nor the down train crossing the line upon which he was running, until he was so close upon it that he had no time even to apply the continuous-brake, and he was still running at seven or eight miles an hour when the engines met on the crossing, the driver of the Torrance train having reduced the speed of his train to four or five

miles an hour, by the prompt application of the continuous-brake directly he saw the Craigendoran train emerging from the tunnel about 35 yards from him.

The only person to blame for the mishap is James Rennie, the driver of the Craigendoran train, who is a very experienced driver of unexceptionable character, and who gave his evidence in a very straightforward manner.

He states that, when entering Gallowgate Central station, he fully believed that he saw the advance starting-signal and the Bridgeton Cross distant-signal off for him; but he admits that, having stopped his engine just below these signals, he did not look up, before starting, to see in what position they were then standing. He states frankly that, having since heard the signalman in Bridgeton Cross station junction cabin state that the advance starting-signal was at danger when he entered the station, and that it was not pulled off, he will not contradict this statement, and will allow that he must have been mistaken. I did not therefore consider it necessary to defer making this report until I could take the evidence of porter Robertson, who is still very ill in hospital, and will probably not be in a fit state to be questioned for several weeks.

Driver Rennie had at the time been on duty for two hours.

His fireman did not see the signals at all, being, with his driver's knowledge, otherwise engaged, and this accident should act as a warning to both the driver and the fireman to attend more strictly to the regulation, which enjoins that the fireman as well as the driver should, when practicable, be upon the look out for signals when approaching any stations or junctions.

Although no alteration in the line or the signalling at Bridgeton Cross will prevent accidents, if drivers choose to run past signals at danger, it is satisfactory to learn that the Company have found it to be practicable to make some alterations which will enable down trains starting from the up side of the station to run on to the down line nearer to the signal-cabin, and therefore at a greater distance from the mouth of the tunnel than at present, and I think it would also be an improvement if the up advance starting-signal at Gallowgate Central were slotted from Bridgeton Cross station-cabin.

It appears from the evidence that the two drivers concerned, with their firemen, are in the habit of working for a long and a short day alternately, which is not a satisfactory mode of working, however much it may be in accordance with the wishes of the men themselves. Each days work should stand by itself, and an excess in the hours of work on any one day cannot be excused on the ground of short hours on alternate days.

I have, &c.,

F. A. Marindin,

Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

Particulars of Damage to Rolling Stock.

North British third-class carriage No. 1122.—One end, four quarters, three doors, one headstock, end bars, one screw coupling, two buffer-rods, two buffer-casings, twelve body-glasses, three partitions, roof, Westinghouse brake, and gas fittings broken.

North British third-class carriage No. 720.—One end, two quarters, two doors, two partitions, one headstock, one end bar, two buffer-casings, two buffer-rods, roof, side, bottom, also Westinghouse fittings, damaged.

North British brake third carriage No. 134.—Both ends, two quarters, two partitions, one headstock, five quarters, and three door glasses, two guard-plates, two axle-boxes, three buffer-casings, one end bar, three panels, roof, brake-column, also Westinghouse brake-fitting, damaged.

North British brake third carriage No. 175.—One end, two step-hangers, three end-glasses, two axle-boxes, two headstocks, one guard-plate, and two tie-rods, damaged.

North British engine No. 494.—Fore-end of right frame broken; buffers and beams destroyed; leading bogie axle bent; axle-boxes broken; two horn-blocks broken; left bogie-frame broken and right bent; bogie-stay bent; footplates and angle-irons bent; front platform destroyed; relief-cock and mounting destroyed; back buffer-beam cracked and bent at right-hand side; buffer-beam, angle irons bent.

North British engine No. 94.—Buffer-beam and buffers destroyed; both frames bent at fore-end; platform and buffer-beam angle-irons to renew; steam-chest door broken; two brake-blocks to renew; two brake-hangers, one brake tie-rod, rod-end, three lamp-holders, two lubricators, two sand-pipes and cocks, two relief-cocks and mounting, tank-lid, drag-box, draw-hook and coupling, also tallow-cock, all to renew.

Printed copies the above Report were sent to the Company on the 16th August.

NORTH BRITISH RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
29th July 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 15th instant, the result of my enquiry into the causes of an accident which occurred on the 10th instant at Queen Street, low level, station, Glasgow, on the North British Railway.

In this case as the 5.55 p.m. workmen's train from Clydebank to Shettleston (consisting of engine and tender, 14 third-class and one composite carriages, and two brake-vans) was entering the up loop line at Queen Street, low level, station, at 6.29 p.m., the leading wheels of the engine left the rails close to the facing-points leading from the up main platform line to the up loop platform line, and the engine ran for 72 yards before coming to a stand, when the engine, tender, and the five leading vehicles in the train were found to be off the rails.

No person was injured.

The damages to the rolling-stock and permanent-way were as follows:—

Engine No. 381.—Tender-buffer, brake-rod, and hanger-stud damaged; buckle of left-hand driving-spring broken.

Brake-van No. 136.—Buffer, headstock, and footboard damaged.

Permanent-way.—One rail, 140 single chairs, three guard-chairs, one crossing-chair, and 40 fishplate bolts broken; 100 spikes, 100 sleepers, and 160 keys damaged.

Description.

At Queen Street, low level, station there are two side platforms and one centre platform, the latter being between the up and down main lines, and the side platforms being for the up and down loops.

The line runs from west to east, and the two up lines are on the north side, the facing-points for the up loop at the west end of the station being 43 yards west of the signal-cabin, which is on the west end of the centre platform.

The line falls from the west on a gradient of 1 in 200 to a point 70 yards west of the facing-points, and is then level through the station, and it is upon a 20-chain curve to the left as far as the facing-points, where the up loop leaves the up main line on a 14-chain curve.

The line is in tunnel to within 15 yards of the signal-cabin.

This railway, forming a part of the Glasgow City and District Railway, was opened in 1886, and the permanent-way, which is in good order, has not been altered since that time.

The engine (No. 381), which is a six-wheeled coupled engine, was built by Messrs. Neilson & Co., Glasgow, in 1868, and has a total mileage of 709,290 miles.

It was rebuilt at Cowlairs in 1892, since which time it has run 31,507 miles. The wheels have a diameter of 5 ft.

The weights and wheel-base are as follows:—

Weights.

	Tons	cwts.
On leading-wheels	12	0
On driving-wheels	12	12
On trailing-wheels	9	13
Total	34	5

Wheel-base.

	Feet	ins.
From leading to driving wheels	7	3
From driving to trailing wheels	7	9
Total	15	0

Evidence.

John Campbell states: I have been 14 years in the service, and a driver for 11 years, and accustomed to drive on the City and District line. On the 10th July I came on duty at 5.50 a.m. to work until 6.45 p.m., having left duty the day before at 3 p.m. after nine hours work. I work a long and short day alternately, and am off duty on Sundays. My engine, No. 381, is a six-wheeled coupled engine, with a six-wheeled tender. It is fitted with the Westinghouse brake apparatus, but the brakes on the engine and tender are actuated by steam, the brakes upon the engine and train being applied by the same handle. I was driver of the 5.55 p.m. train from Clydebank to Shettleston, a workmen's train, which left Clydebank at right time. There were seventeen vehicles in the train, pretty well full. A good many passengers left the train at Finnieston. The train was due to leave Charing Cross at 6.14 and Queen Street at 6.18. We started at right time, but lost time on the road owing to trains ahead. We left Charing Cross at 6.26 p.m. The signals were all clear for running into Queen Street on the the loop line, and I ran at my usual speed. On arriving at the facing-points at the west end of Queen Street, my speed was not more than five miles an hour. I had shut off steam when passing the distant-signal in the tunnel, and I checked my train by the use of the continuous brake between the distant and home-signals. When reaching the points my steam and my brake were both off. Just when upon the points I felt the engine give a surge, and at once it left the rails towards the right-hand side. I applied the brake gradually and we came to a stand in 72 yards. When we stopped the right-hand wheels of my engine were on the 4-foot way of the main line and the left-hand wheels on the 4-foot way of the loop, the rails on the 6-foot side of both lines being drawn together under the engine. The five leading vehicles had followed the engine, and the remainder were on the rails west of the facing-points. I went and examined the points. When I saw them they were lying right and bolted. The right-hand switch was tight against the stock-rail. There was very little mark to show where the engine had mounted. I have never noticed anything wrong with these switches before. My engine was in good order, and was running steadily, and there appeared to be nothing amiss with the line. I cannot account for the accident. I am certain that my brake was released 70 yards before coming to the point, and was not applied again until after I left the rails. No person was injured. The point where I had to stop at Queen Street was at the east end of the platform. I was coming in, as I always do with a workmen's train, rather slower than with an ordinary train. I reckon that I took from 6.26 to 6.29 to run from Charing Cross.

William Owen states: I have been 10 years in the service and four years a fireman. On the 10th instant I was fireman to James Campbell. His evidence, which I have heard read over, is correct.

Alexander Lander states: I have been 10 years in the service, and a guard for one year. On the 10th July I came on duty at 8 a.m. at Allon to work till 10.39 p.m., being off from 9.20 a.m. till 4.48 p.m. I was guard of the 5.55 p.m. workmen's train from Clydebank, composed of engine and tender (running engine in front), 14 third-class and one composite carriages, and two brake-vans. We started from Clydebank at right time, and stopped at Toker, Finnieston, and Charing Cross. We left Charing Cross at 6.25 p.m., 10 minutes late, having lost time by signals on the way. We ran our usual speed, and no faster, to Queen Street. I did not see the signals at Queen Street, but we had to run to the outside platform. The speed of the train was, I should say, about five miles an hour when at the facing-points at the west end of Queen Street, although I can hardly estimate the speed accurately. We made a sudden stop, and then I got out and found that the engine and five leading vehicles had left the rails. I cannot say what was the cause. I did not examine the points. The train was well filled when we started, but about half the passengers had got out on the journey.

James Small states: I have been about four years in the service, and 2½ years a signalman, and in Queen Street west cabin since May 10th. The 5.55 p.m. workmen's train from Clydebank was offered to me from Charing Cross at 6.24, and accepted at 6.27, given on line at 6.27, and arrived at 6.29. I lowered my signals for it to run into the loop at 6.27. I saw it approaching, but noticed nothing unusual until it reached the points, when the engine lifted on the right-hand side and came off the rails, followed by the leading vehicles in the train. I saw the driver using the Westinghouse brake to stop his train. When the engine passed my cabin off the rails, it was running at three or four miles an hour. The time taken to run from Charing Cross was about the usual time. I cannot give an estimate of the usual speed of trains entering the station. The last time I moved the facing-points before the run off was 6.11, when the 5.20 train ran to the centre platform. The next train was the 6.5 from Hyndland, which ran to the loop at 6.24, and the next was the 5.55 train, which left the rails at 6.29. I did not move the points or the locking-bar lever between 6.24 and 6.29. I did not examine the points until the train had been removed.

James Bryce states: I am district inspector of permanent-way, in charge of the line between Knightswood south junction and Cowlairs west junction. I was at Partick when the accident happened on the 10th instant. I went to Queen Street at once and arrived at 7.30 p.m. I examined the facing-points, and found that they were perfectly close and locked. There was a mark on the top of the right-hand side switch as of a wheel flange mounting. About 14 or 16 inches from the end there was a chip on the outside of the blade, where it lies against the stock-rail, as if the flange had dropped in. The next mark on the right side was on the second single chair past the heel chair, which was broken, and from that point eastward nearly all the chairs were broken. On the left side there was no mark until beyond the heel of the switch, and there several chairs were broken. There were four broken fishplate bolts at the first joint past the heel on the right side. The rails were a bit twisted, but the inner rails were not drawn together until after passing the crossing. I gather from these marks that the right-hand side leading wheel mounted at the switches and dropped in between the switch and the stock-rail at the heel of the joints, but that the other engine wheels kept the rails until the fishplate bolts at the first joint east of the heel of the switch were broken and the plate fell off, and that they then ran off through the joint. I inspected the line on the Friday before the accident, and it was in good order. The switches are 16 feet long, and are in good condition. The stretcher-rods were not bent at all. The cant at the junction is 2⅞ inches, and runs up to 3½ inches further on. It was regular. The line was exact to gauge at the points. There was no low place in the rails near the points.

Francis Sherry states: I am a permanent-way man, and have been about three years in the service.

It is my duty to walk the line up and down between Stobcross junction and Bridgeton Cross junction throughout the day, and if there is anything wrong I report to Inspector Bryce. At the time of the accident I was at home. I got to Queen Street at 9 p.m. The points were then all right. I had passed over the line at that point at 2.15 p.m., and everything then was in perfect order.

Thomas Scott, states: I am locomotive foreman at Cowlairs. I arrived at the scene of the accident at 7.20, and then returned to Cowlairs to give orders as to the break-down gang. I got back to Queen Street at about 8 p.m. I examined the engine and permanent-way. The engine was standing partly on the 4-ft. way of the loop and partly on that of the main line, with the inner rails of each drawn together. I could see nothing whatever to account for the engine leaving the rails. I afterwards examined the engine in the shops. The flanges of the leading wheels were worn, but were not very thin. They were worn square and were not coned. They have been running for 12 months since they were last turned up. Since the accident the leading-wheels and trailing-wheels have been changed, and the flanges have been rounded off a bit. The springs were in good order, but the buckle of the left-hand driving-spring was broken by the accident.

Conclusion.

From the marks found on the permanent-way after the accident, it is evident that the right leading wheel of the engine ran up the switch on the right side, immediately after passing the nose of the switch, and that this wheel ran along the top of the switch until it dropped off at the heel, between the switch and the stock-rail, into the 4-ft. way of the main line, the corresponding wheel on the left side dropping off into the 4-ft. way of the loop line at the same time.

Probably no other wheels left the rails until the line was disturbed on the breaking of the fishplate bolts at the first joint east of the heel of the switches, when all the wheels of the engine and tender, and the five following vehicles left the rails.

There was nothing in the state of the permanent-way to account for the accident, and it seems clear that the points were in good order and properly bolted, with the right-hand switch close against the stock rail, for there was no mark of a blow on the nose of this switch, as would have been the case if it had been lying away from the stock-rail.

The evidence as to the speed, given by the driver, guard, and signalman, is hardly compatible with the position of the engine after the accident, for it cannot be credited that the engine ran for 72 yards off the rails before coming to a stand, if it were only running at five miles an hour when it reached the facing-points.

Nevertheless, although I have formed the opinion that the speed was greater than is desirable at this point, I do not attribute this slight accident to excessive speed, but rather to the condition of the flanges of the leading wheels of the engine, which were worn thin and square, and I consider that the engine should be at once sent into the shops to have its wheels put into proper running condition.

I would recommend that the speed of trains entering the loops at Queen Street, at both ends, should be limited to eight miles an hour, and that the main line leading up to the facing-points should be fitted with check-rails for a few yards.

The driver and fireman had at the time been on duty for 12 hours and 40 minutes, which is too long a tour of duty, and, although it appears from the evidence that their hours of work on alternate days are short, this does not excuse excessive hours on any one day.

I have, &c.,
F. A. Marindin,
Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

Printed copies of the above Report were sent to the Company on the 25th August.

PRESTON AND WYRE JOINT RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
31st July 1893.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 3rd instant, the result of my inquiry into the circumstances connected with the accident which took place on the 1st instant close to Poulton-le-Fylde Junction station on the Preston and Wyre Joint (London and North-Western and Lancashire and Yorkshire) Railway.

In this case the 11 p.m. London and North-Western Company's passenger train from Blackpool for Stockport, consisting of a six-wheeled coupled goods engine, chimney in front, and six-wheeled tender, three carriages, and a brake-van, fitted

throughout with a continuous brake, while running round a sharp curve just before reaching Poulton-le-Fylde station (where it had not to stop) left the rails with the exception of the brake-van.

The accident was attended with disastrous consequences, two passengers and the driver having been killed on the spot, and 42 passengers having complained of more or less serious injuries. A list of names will be found in an Appendix. The fireman and guard of the train were also injured.

The engine ran, after leaving the rails, about 40 yards and then turned over on its left side across the up and down Fleetwood lines; the tender stopped close to and on the Fleetwood side of the engine with its wheels uppermost; the first coach stopped close to the tender on its wheels at right angles to and across both Fleetwood lines; the second coach stopped alongside of the wheels of the engine with its front across the Fleetwood down line; the frame of the third coach stopped abreast of the second coach obliquely across the line on which it had been running; the body of this coach was lying with its front end obliquely across the down Blackpool line, and its rear end was resting on the framing. The brake-van, the fourth vehicle, was on the proper rails close up to the rear of the frame of the third vehicle.

A list of damage to the rolling stock is given in an Appendix.

Description.

The spot at which this accident occurred is nearly $3\frac{1}{2}$ miles distant from the buffer-stops at Talbot Road station, Blackpool. This distance is made up as follows:—

	Yards.
From buffer-stops at Talbot Road station to Blackpool station cabin	280
From Blackpool station cabin to Blackpool A cabin	380
From Blackpool A cabin to Blackpool goods junction	673
From Blackpool goods junction cabin to Bispham B cabin	1,000
From Bispham B cabin to Bispham A cabin	418
From Bispham A cabin to Carleton crossing cabin	1,115
From Carleton crossing cabin to Poulton crossing cabin	1,488
From Poulton crossing cabin to the run-off	626
3 miles 820 yards =	5,980

From Talbot Road station for a distance of about 3 miles 690 yards, or as far as a point about 130 yards short of the first mark of derailment, the line is practically straight and the gradients are gentle. At this point a curve (to the right as approached from Blackpool) of nominally six chains radius commences and extends for a distance of 220 yards to where it joins the Fleetwood line. Immediately beyond the junction occurs a public road level-crossing, adjoining which is the down platform at Poulton station, the up platform commencing about 80 yards further on. At the commencement of the curve the line rises towards the station on a gradient of 1 in 200, which continues for some distance.

Though the curve is nominally one of 6 chains (or 396 feet) radius, and is so described in the parliamentary plans deposited in 1866, when powers were obtained for doubling the line between Poulton and Blackpool, the radius as measured from a large scale plan would be actually 420 feet were the curvature equal throughout, but the radius of the half next Blackpool measures about 460 feet and of the half next the station 400 feet. As measured on the ground with 60 feet chords the versed sines being taken at every 30 feet, the successive radii, commencing from near the Blackpool end, were 600, 491, 422, 415, 450, 441, 422, 373, 313, 441, 450, and 400 feet, showing large irregularities in the maintenance of the curve, particularly at a point about 30 yards from the first mark of derailment, where the radius was for a short distance only $4\frac{3}{4}$ chains, but becoming almost exactly six chains at the mark.

The permanent-way is very substantial and the inside rails of the curve are provided with check-rails, $2\frac{1}{8}$ to $2\frac{1}{4}$ inches distant from the stock-rail, and from $1\frac{1}{4}$ to $1\frac{3}{8}$ inches higher. The gauge round the curve is from $\frac{1}{8}$ inch to $\frac{3}{8}$ inch slack, it being $\frac{3}{8}$ inch at the mark.

The super-elevation of the outer rail varies between $2\frac{1}{2}$ and 3 inches (it being about 3 inches at the mark), suitable according to the ordinary rule to a speed of from 5 to $5\frac{1}{2}$ miles an hour round a 6-chain curve.

The engine which drew the train was a six-wheels-coupled goods engine with a rigid wheel base of 15 ft. 6 ins., the wheels being 5 ft. $2\frac{9}{16}$ ins. in diameter, the

centres of the leading and driving wheels and of the driving and trailing wheels being 7 ft. 3 ins. and 8 ft. 3 ins. apart respectively, and the weight in working order being 31 tons, nearly equally distributed; the tender had also six wheels, 3 ft. 9 ins. in diameter, its weight when fully loaded being 25 tons.

The tyres and springs of the engine and tender were in good order.

The marks of derailment were extraordinarily few; the first was a bright mark, 47 yards inside the home-signal, about 18 inches long on the top of the outer rail, oblique in its direction; it commenced near a joint, and did not extend to either edge of the rail; if continued across the top of the rail its length from inner edge to outer edge would have been about 5 ft. 6 ins.; about 9 ft. from this mark two chairs were marked outside the outer rail, the next chair was cracked, the next marked, the next cracked, the next marked, and the next but one broken. Marks were also observed on the inside of the check-rail commencing about 35 yards on the Blackpool side of the mark on the rail; these marks were intermittent and three of them were particularly noticeable. There were no marks visible on the top of the check-rail and none on the ballast. These were the whole of the marks which were seen by the assistant engineer of the Lancashire and Yorkshire Railway who was on the spot about four hours after the accident.

As before stated the engine, tender, and first three vehicles ran about 40 yards after leaving the rails, where they were spread out in a fan-like form across both the Fleetwood and Blackpool lines. On their way a stack of chairs about 27 yards from the mark was struck and scattered, one piece being thrown to a distance of 45 yards from the stack.

A list of the damage caused to the permanent-way is given in an Appendix.

Evidence.

1. *Robert Sanderson*, platform inspector at Talbot Road station, Blackpool, 18 years in the Joint Company's service, five to six years in his present position.—I commenced work on 1st July at 8.30 a.m., to leave off at 11.30 p.m. I do not remember the arrival of the train from Stockport, due about 3.23 p.m., but I was on duty on No. 6 platform when it started back at 11.2½ p.m. 2½ minutes late. A man I took to be the driver came to me about 10.55 p.m. to consult me about the stops of the train. I went with him to look at one of the time bills and told him all the stops between Blackpool and Manchester, viz., Wigan and others, Wigan being the first. I had no further conversation with him. In my judgment he was perfectly sober, and I perceived no signs of liquor about him. He said nothing about the journey. I saw also the guard of the train shortly before it started. He said he thought he would have time to work the train through to Manchester without exceeding his hours. He also appeared perfectly right. I saw no one else connected with the train, which consisted of engine, tender, three coaches, and brake-van. On coming to the train before it started I found the two leading compartments full of passengers, and I directed them to remove to another part of the train in accordance with the London and North-Western Company's rule as to keeping the two leading compartments empty. I heard the vacuum-brake tried before the train started.

2. *Edward Kenny*, assistant locomotive foreman during summer at Talbot Road, Blackpool, for the London and North-Western Railway Company.—I saw driver Cornelius Ridgway about 10.15 p.m. He was oiling his engine in the carriage sidings. I had some talk with him about leaving the siding. I was close to him and observed not the least symptoms of drink about him. I am certain he said nothing to me about not knowing the road, and he expressed no objection to driving the train. I also spoke to the fireman about setting some points. He also appeared perfectly sober. I had seen Ridgway at Blackpool on 26th June, and he started back at 8.24 p.m. with an excursion train; on that occasion he had a different fireman. I had often seen the fireman at Blackpool on previous occasions. I booked Ridgway off at 2.30 p.m. after his arrival at 2.3 p.m., and signed him on at 10.30 p.m., and I gave him an order on the barracks for taking rest. The fireman was treated in the same way.

3. *Richard Atkinson*, signalman; 20 years in the joint Company's service, 17 years signalman.—I have been employed 12 years at Carlton crossing cabin, about 1¼ miles from Poulton junction. I came on duty at 6 p.m. for 12 hours, Bispham B and Poulton crossing being the adjacent cabins on the Blackpool and Poulton sides, respectively 1,533 yards and 1,488 yards distant. I got the "Be ready" from Bispham for the 11 p.m. train at 11 p.m. I sent it on to Poulton crossing, and it was accepted. I lowered my home and distant signals for the train about 11.2 p.m. The train was given in at 11.7 p.m., and it passed at 11.8 p.m., but I think the actual time was three-quarters of a minute, from something which passed between me and the Poulton junction signalman. I noticed the train passing at a high speed, but not higher than trains are in the habit of passing, and I did not feel alarmed. The train was cleared back at 11.9; the time also, I think, less, rather than more, than a minute. The night was fine. I was alone in my cabin. There was no train passing on the down line after 10.41 p.m. till 3.33 a.m.; a down train which had been signalled at 11.5 p.m. was cancelled. I am quite sure I made the entries as regards the 11 p.m. train before the accident. The time occupied in running between Bispham B and my cabin varies from one to two minutes, being more often two minutes than one.

4. *Ralph Parr*, signalman; 11 years in the Joint Company's service, eight years signalman.—I have been about six months at Poulton crossing cabin (about 700 yards from Poulton junction), where I came on duty at 6 p.m. for 12 hours. I received the "Be ready" for the 11 p.m. train at 11 p.m. The 10.50 p.m. train had passed at 11.2 p.m., and was cleared back at 11.3. At 11.2 I accepted the "Be ready" for the 11 o'clock train. The "Be ready" was accepted by Poulton junction at 11.5 p.m., upon which I lowered the up home and up distant signals. I received "Train on line" at 11.8 p.m., and the train passed at 11.9 p.m., whether over or under the minute I could not say. It was not cleared till 4.21 a.m. on the 2nd, but I cleared it directly it had passed. I noticed the train passing and I thought the speed was too fast

faster than usual. The night was clear. I had a down train offered at 11.4 p.m., but it was cancelled at 3.1 a.m. Many of the trains take two minutes, and others one. I do not think steam was shut off when the engine passed. It is customary for steam to be shut off 200 yards from my cabin. Seeing steam on made me think the speed was faster than usual.

5. *Henry Hornby*, signalman; 14 years' service in the Joint Company, 12 years signalman.—I have been three months at Poulton junction, where I came on duty on 1st July at 10 p.m. for eight hours. I was alone in the cabin when the accident took place at 11.11 p.m. I received the "Be ready" for the 11 p.m. train at 11.3 p.m. from Poulton crossing, the 10.50 p.m. train passed at 11.4 p.m., and I did not accept the "Be ready" till 11.7 p.m. as the 10.53 p.m. train had usually to leave the station for Fleetwood, and would cross the junction; but on hearing from Carlton crossing how the 11 p.m. train was running, and finding it could cross the junction before the Fleetwood train was due to start at 11.3, I accepted the "Be ready," and passed it on to Poulton cabin A, where it was accepted, and I lowered my up home and distant signals. I received the train "On line" at 11.9 p.m., and at 11.11 p.m. I heard a loud noise which was caused by the accident. I looked at the clock at once on hearing it. I had first seen the train this side of Poulton crossing, then lost sight of it, and again saw it at the beginning of the curve. I cannot explain why I thought the train was coming faster than usual, but I did have this idea before I heard the crash. I do not know where steam is usually shut off before approaching the curve. I do not think the London and North-Western drivers run faster round it than the Lancashire and Yorkshire drivers. I stopped a down train which was standing in the station, and for which the "Be ready" had been accepted as the down road was fouled. I was alone when the accident happened. I could not tell whether steam was on or not when I caught sight of the train the second time. I think the time was two minutes, as near as may be, between Poulton crossing and the crash.

6. *William Sutherland*, station-master at Poulton; 22 years' service, 1⅔ years' station-master at Poulton, and 10 years at White Bear previously.—I was on duty when I heard of the accident from the driver of the Lancashire and Yorkshire train for Blackpool then in the station. I immediately went to the spot, and found both the Blackpool and Fleetwood lines all blocked, and the engine on its left side across both Fleetwood lines; the tender was lying wheels uppermost alongside the engine on the Fleetwood side, the leading end of the tender next the footplate of the engine. The first coach was in an upright position resting on the engine and tender, with the first two compartments demolished, and close to a coal waggon on a siding; the second coach badly smashed, on its side between the engine and the Blackpool line; the frame of the third coach on its wheels on the up Blackpool line, and the body across both Blackpool lines; the van was on its wheels on the rails close up to the wreck. The driver was on the footplate under the cab, buried in coals, quite dead; it took half-an-hour, or perhaps more, to get him out. The two passengers who were killed were in the second carriage under the frame, both dead; they were extricated in 15 to 20 minutes. All the injured were released in about the same time. When it was light I examined the curve, and saw a few slight marks on one or two chairs outside the high rail, also on the check rail. The mark on the check rail was the only one, as if a wheel had crossed it. The mark was on the Blackpool side of the marked chairs. I saw no marks on the ballast before the engine left the rails, after which there was a wheel track to where it stopped. A signal-post was struck and knocked down. I had no conversation with the fireman or guard as to the cause of the accident. I did not show the mark on the check-rail to any one else, it was a very faint mark, more like a scratch than what would be made by the flange of a wheel.

7. *Richard Sutton*, permanent-way inspector in the Preston and Wyre district in the Joint Company's service.—I have been nine years in that position. I had gone to bed soon after 11 in my house, which is about 50 yards on the Blackpool side of Poulton crossing, on the down side of the line. Hearing an up train approaching with unusual noise, I jumped out of bed and opened a window looking on to the line and saw the smoke out of the funnel of the engine, which had passed beyond my house. I judged the speed to be very considerable on account of the noise the train made. I stopped at the window till I heard a crash in about half-a minute after I had seen the train. I went up to the junction as soon as possible and found the train wrecked. As soon as it was daylight I examined the curve, and the only mark I saw was across the top of the outside rail, about 18 inches long in the centre of the rail, about opposite the red paint mark. Two chairs were chipped and one broken on the outside of the high rail. There were no marks on the check-rail, nor on the ballast in the 4-ft. space. I can assign no other cause for the accident than excessive speed. Some chairs were struck and pieces thrown 40 yards or more from the place where they were lying. The road has not been disturbed since the accident. The mark on the top of the rail was close to a joint on the station side of it. The joints of the check-rails are not further apart than those of the ordinary rails. It was the noise made by the train that made me think the speed was faster than usual.

8. *Mr. W. B. Worthington*, assistant engineer on the Lancashire and Yorkshire Railway.—I reached Poulton about 3 a.m. on the 2nd July. I found the wreckage of the train in much the same position as shown on the plan. I then examined the curve and found marks on the inside of the check-rail higher up than would be caused by the ordinary traffic, commencing about 35 yards on the Blackpool side of the mark on the high rail and continuing up to the mark. These marks on the check-rail were intermittent. I noticed three particularly. I noticed no mark on the top of the check-rail. I then found a bright mark about 18 inches long on the top of the rail, but not extending to either edge but nearer to the outside than the inside, and oblique. This mark if continued across the top of the rail would have been about 5½ feet long. It was on the station side of this and 7 feet from the station-end of it, that the first chair was marked on the outside of the high rail, five after this being chipped or marked and one broken. There were no other marks than these on the rails or chairs and none on the ballast, till after the mark on the top of the rail, either in the 4-ft. space or elsewhere, implying that the right wheels must have jumped the 4-ft. space. So far as I can see the curve has not been altered in any way on the Blackpool line after the occurrence, except by the replacement of the broken chair. The cant of the outer rail is intended to be 3 inches and the gauge to be 4-ft. 8¾ ins. The curve is intended to have a six chain radius for the centre line. I will hand in a list of the material required for making good the damage. The rails are steel, 84 lbs. to the yard, laid in 1878, the check rail laid in 1883 is also steel. The rails are 30 feet long, the chairs weigh 45 lbs., with two trenails and two spikes to each, there are 12 sleepers to the rail length, 9 ft. by 10 in. by 5 in.

9. *William Henry Lowe*, fireman; 10½ years in the service of the London and North-Western Company, eight years fireman.—I am stationed at Stockport, and on the evening of 30th June I was informed that I was to act as Ridgway's fireman with the 11.15 a.m. train from Stockport for Talbot Road, Blackpool, on the 1st July. I joined engine No. 1545 at the sheds about 10 a.m., being booked on at 10.25 a.m. The engine was a six-wheeled coupled goods engine

and six-wheeled tender, fitted with a steam-brake applying to the engine and tender, and with vacuum-brake appliances for the train. We then backed in to the station and left soon after time. I was well acquainted with the line to Blackpool *viâ* Poulton, and had travelled on it once before this year, on Good Friday. I had not worked with Ridgway before the trip on the 1st July. On the journey to Blackpool Ridgway said he was not well acquainted with Preston station and the line from Preston to Kirkham junction, but said nothing about the line beyond. On the down journey we stopped at Poulton and I told him on starting that the curve was a very nasty corner, but I do not remember saying anything about speed, which was slow on going down as we had been stopped at Poulton. We reached Blackpool all right though late. The engine was in perfect running order, and the brake acting well on the down journey. We signed off duty at Blackpool at 2.30 p.m. and signed on again at 10.30 p.m. We first went to the lodge and got some food and then rested in the lodge. After about two hours we went for a walk about Blackpool and visited the winter gardens and returned to the lodge for supper and a wash and then went back to our engine. While in Blackpool we had three glasses of beer each, the first two about 4 p.m. and one glass about 6.30 or 7 p.m. That was all; we had no spirits. Nothing particular then occurred before we started back from Blackpool at 11 p.m. Nothing was said about Ridgway not knowing the road. I went with the inspector to see about the stops and found the first was to be Wigan; I did not see Ridgway talking with him. Ridgway made no objection that I heard about driving the train. Before starting I again drew his attention to the Poulton curve and told him to be very careful. On starting he and I were alone on the engine. The brake was tested before starting and was found to be in order by the gauge. The steam pressure at starting was about 120 lbs. I am not aware of the blowing-off pressure, but I saw steam blowing off when it got to about 110 lbs. My position on the footplate was on the 6-ft. side with the engine running as it was, chimney in front. The vehicles were not the same as on the down journey, when there were 10 Lancashire and Yorkshire vehicles, the up train consisting of only three coaches and a brake-van. After leaving Blackpool, the distant-signal worked from the excursion cabin was at danger; after this the signals were all off as we approached them. I could not say to how high a speed we attained. On the Blackpool side of Bispham station I got the pricker to rake the fire, and before I began to stir it I told the driver to be careful at the Poulton curve, and to shut off steam at Bispham station and, if necessary, to regulate the speed with the brake. After I had done with the fire I put the feed on and the injector to put some water into the boiler, and after this I put my head outside the cab and found we were close on to the curve, nearer to it than I had thought. I could not say whether steam was actually shut off, but I am almost certain it was. I told the driver to "steady" as I thought the speed was too fast for the corner, though I cannot say what the speed was. I again put my head out and as the speed did not seem to slacken much I said "Wo," and immediately on this the engine left the rails. I then lost consciousness and on regaining it found myself scrambling out of a hole with steam rushing out. I was badly hurt on the head and left side and my right-hand little finger burnt. I am still on the sick list. On saying to the driver "Steady" I think we must have passed Poulton crossing, and the speed did not alarm me. He made no reply, and I cannot say whether he did anything to check the speed. On my warning about the curve at Blackpool he said, "All right, Bill." I had taken no part in the working of the engine. I cannot account for Ridgway's conduct except by supposing he was on the curve before he knew it. I am quite certain that Ridgway was not at all affected by the beer he had drunk. I am employed as extra driver occasionally. If I had charge of an engine I would not go more than 10 miles an hour round the curve. I felt nothing wrong before the run-off actually took place. I had no instructions to act as pilot to Ridgway and I thought that he had been accustomed to the road some years ago. I have known Ridgway for many years. We got back to the lodge about 9 p.m. We were together the whole of the time at Blackpool.

10. *Edward Rowland*, brakesman; 16 years in the London and North-Western Company's service; all the time brakesman.—I am stationed at Spring's Branch, Wigan. I commenced work at 3.30 p.m. on July 1st, to sign off at 3.30 a.m. on the 2nd. I worked an empty stock train into Blackpool arriving there at 8.15 p.m. The guard who had brought the Stockport train to Blackpool not having turned up to work it back, I volunteered to do so and took charge of it. We started at 11.2 p.m., two minutes late, waiting for a guard to be appointed. I was in the brake-van at the rear of the train and there was also in it a Manchester brakesman, riding as a passenger. I know the road and signals well between Blackpool and Manchester, and I know also the Poulton curve. I noticed nothing unusual after starting, and did not observe that the speed was too high. I was on my way to the window to look out for the junction-signals, when, as I thought, I was between Carlton and Poulton crossings, but before I got to the window I was thrown over some milk-cans and could not get up till after the train had stopped. I felt no application of the brake just before the accident. I noticed the vacuum-gauge showed 18 inches at Blackpool before starting, but I did not notice it afterwards. I spoke to the driver once, and to the fireman twice at Blackpool before starting. They both seemed perfectly sober. I think we were running from 20 to 30 miles an hour at the time of the accident. I should have applied the brake had I known we were so near the curve. I have often worked passenger trains before. My van stopped on the rails buffer-locked with the coach in front. The passengers, about 50 in number, were principally in the back of the train. My watch was 11.12 p.m. when I found myself on the floor. I am still on the sick-list, hurt in the legs.

11. *Ralph Turnbull*, assistant locomotive foreman at Stockport shed.—I have been two years in that position. I appointed Ridgway to drive the 11.15 a.m. train from Stockport for Blackpool on the 1st instant. It was a new train commencing on that day. He was well acquainted with the road, according to what he told me. I was under the impression that he had been working summer trains to Blackpool last year, but I cannot trace his having been there last year, and so far as I have searched at present I cannot find that he has been to Blackpool for three years. He made no objection, but applied for the working of that train. Ridgway's regular fireman, Alfred Barnett, had been brought out the previous night at 11 p.m. to act as driver in the locomotive yard, and Lowe was the only man available to go out with Ridgway. I knew that Lowe was acquainted with the Blackpool line and he made no objection to going. Ridgway had asked me to put a tidy mate with him and I considered that in giving him Lowe I thought I was doing so. It is customary for drivers to apply for a pilot if they are unacquainted with the road.

Conclusion.

The circumstances connected with this accident all point to the conclusion that it was mainly caused by too high a rate of speed on a sharp curve of about six chains

radius at the actual point of run-off, the radius varying between 9 and 4¾ chains from the commencement of the curve to the mark of derailment, the sharpest point being about 30 yards before this mark was reached. The engine, tender, and first two vehicles, out of the four of which the train was composed, appear to have left the rails at the same spot about 130 yards from the commencement of the curve, and from the very slight marks of derailment either on the outer rail or check rail and from the absence of any mark in the ballast between the rails, it would seem that the wheels must all have, more or less, jumped the rails. That the speed was high is shown, (1) by the evidence of the fireman and guard of the train, who both state they were not aware that they had entered the curve until just before the accident or they would have taken means to check the speed; (2) by the evidence of signalman Parr on duty in Poulton crossing cabin, about 626 yards from the first mark of derailment, who thought the speed of the train as it passed his cabin was too fast and higher than usual, and according to whose evidence the train had occupied only one minute, or probably less, in running between Carleton crossing and his cabin, a distance of 1,488 yards, the Carlton crossing signalman confirming this and stating that the time from the train passing till it was cleared back by Parr, was, if anything, under a minute; Parr was also of opinion that steam was not shut off when the engine passed his cabin, though it is customary for it to be shut off 200 yards on the Blackpool side of it; (3) by the evidence of permanent-way inspector Sutton, who occupies a house close to the line about 50 yards on the Blackpool side of Poulton crossing cabin; he had just gone to bed when hearing an up train approaching with unusual noise, which he judged to be indicative of very considerable speed, he jumped out of bed, opened a window looking on to the line (by which time the train had passed), and remained at the window till he heard a crash about half a minute afterwards; he then at once went up towards the station and found the train wrecked; (4) by the position of the engine, tender, and some of the vehicles after the accident, and by the damage they sustained.

Though high speed was the main cause of the accident, there were other contributory causes. First, the fact of the engine being a six-wheeled coupled engine with a rigid wheel base of 15·5 feet; it is possible that an engine with a shorter wheel base might have passed round the curve at considerable speed without leaving the rails. Second, the irregularity of the curve, particularly at a point about 30 yards from the first mark of derailment, where the radius of the curve for a short distance was only about 4¾ chains. Third, the gauge of the curve being only from $\frac{1}{8}$ to $\frac{3}{8}$ inch slack, whereas for so sharp a curve it should be at least $\frac{1}{2}$ inch slack. Fourth, the shape of the inner edge of the top table of the outer rails, bevelled off by constant pressure against them, and thus tending to facilitate mounting.

With regard to the high speed at which the train must have been running at the time of the accident, it must be attributed to the fact that the deceased driver, Cornelius Ridgway, not being well acquainted with the line between Blackpool and Poulton and having a light train consisting of only four vehicles, had reached the curve before he was aware of it and had neglected consequently to reduce his speed as he had doubtless intended to do. There were plenty of landmarks to inform Ridgway of his position had he attended to them, notably the up home-signal at Poulton crossing with the distant-signal from Poulton junction underneath it—these signals being about 500 yards from the Blackpool end of the curve—and the Poulton junction up home-signals situated about the middle of the curve, all these signals being visible for long distances. Ridgway must have either failed to see these signals, or, if he did see them, to realise how they were situated with regard to the curve.

Ridgway's antecedents are as follows:—He entered the service of the London and North Western Company in January 1872, at the age of 17 as a cleaner, became fireman in June 1873 and driver in May 1881; he was therefore about 38 years of age and had been a driver about 12 years. On the day of the accident he had come on duty at 10.25 a.m. at Stockport, signed off at 2.30 p.m. after arriving at Blackpool, where he signed on again at 10.30 p.m. According to the evidence of Turnbull, the locomotive foreman at Stockport, Ridgway had applied to him to be allowed to work this train which was running for the first time on the day of the accident, Ridgway telling him he was well acquainted with the Blackpool line and only asked that he might have a *tidy* mate with him, his own regular fireman being employed for the time elsewhere. Turnbull was under the impression that Ridgway had been employed in working the Blackpool summer traffic last year, but finds he was mistaken. In appointing Lowe, who had become an extra driver in March 1891, and who was well acquainted with the Blackpool line, to act as his fireman, Turnbull

considered he had complied with his request as regarded having a tidy mate with him, and as Ridgway made no application for a pilot, Turnbull naturally concluded he did not require one. It appears that Ridgway had last driven a train to Blackpool and back on June 26th, when he had left Blackpool at 8.24 p.m., and would therefore have passed over the curve in daylight; previously to this there is no record of his having been at Blackpool for three years. During the eight hours he was off duty at Blackpool, fireman Lowe states that Ridgway and he were together all the time and that they had nothing to drink but three glasses of beer each, two about 4 p.m. and the third about 6 or 7 p.m. There was not the least reason for suspicion on the part of those who had seen Ridgway and Lowe before the train left Blackpool that either of them was at all under the influence of liquor.

Lowe further states that on the journey to Blackpool Ridgway mentioned that he was not well acquainted with Preston station and the line between Preston and Kirkham junction, but said nothing about the line beyond; that they had stopped at Poulton on the down journey, and that he had told Ridgway on starting that the curve was a very nasty corner, but that he does not remember saying anything about speed, as they were necessarily going slowly round the curve after having stopped at Poulton. Lowe then shows how they passed their time at Blackpool, and states that before starting he again drew Ridgway's attention to the Poulton curve, telling him to be very careful there, to which he replied, "All right, Bill"; that the brake was tested before starting, and was found to be in perfect working order; that the steam pressure was about 120 lbs.; that the train was much lighter than the one they had brought down, consisting only of four vehicles instead of 10; that he could not say how high a speed was attained after starting; that before reaching Bispham station (about two miles from Poulton) he got the pricker, but before raking the fire he again told Ridgway to be careful at the curve, to shut off steam at Bispham station, and if necessary to regulate the speed with the brake; that after attending to the fire and putting on the feed and injector, he put his head outside the cab and found they were closer to the curve than he had thought (viz., beyond Poulton crossing), upon which he said to the driver "Steady," thinking the speed was too fast for the corner, and not being sure whether steam was shut off, but being almost certain that it was; that he again put his head outside the cab, and as the speed did not seem to slacken much he said "Wo!" immediately upon which the engine left the rails, after which he lost consciousness, and on recovering it found himself scrambling out of a hole and enveloped in steam. Lowe adds that he had taken no part in the working of the engine, and had received no instructions to act as pilot to Ridgway, who had, he thought, been accustomed to the road some years ago; that he can only account for Ridgway's conduct by supposing he was on the curve before he was aware of it, and is certain that he was not at all affected by the beer he had drunk at Blackpool.

The guard of the train, a brakesman named Rowland, well acquainted with the line between Blackpool and Manchester, noticed nothing unusual in the speed, and states that when the train was, as he thought, between Carlton and Poulton crossings, he was on his way to the window to look for the junction signals; that he was thrown down among some milk-cans, and was unable to get up until the train had stopped; that he had felt no application of the brake before this, but that had he known they had reached the curve he should have applied the continuous brake; that the brake-van did not leave the rails, but was buffer-locked with the coach in front of it; that there were about 50 passengers in the train, principally in the hinder part of it; that his watch stopped at 11.12 p.m., 10 minutes after leaving Blackpool.

From the foregoing evidence it will be seen that the deceased driver, Ridgway, must have failed to realise, though warned just before by fireman Lowe, that he had reached the curve, where, though a very cautious speed was necessary, he was evidently running very fast. His action can only be accounted for by the fact that, not being well acquainted with the line, he must have forgotten how close the commencement of the curve was to the Poulton junction up distant-signal, which, together with the up home-signal, were as good landmarks as could well be desired.

Ridgway bore a good character; he had been on duty at the time of the accident only about three-quarters of an hour, having been off duty for eight hours at Blackpool. There is no reason to believe that he was at all the worse for liquor.

Fireman Lowe, as knowing the line better than Ridgway, would, in my opinion, have acted more wisely if in addition to cautioning him, which he was very right in doing, about the necessity of running slowly round the curve, he had deferred attending to his fire until after he had passed the curve, so that he might have paid fuller

attention to the position of the train and to Ridgway's proceedings as the curve was being approached.

Lowe bears an excellent character; his hours of duty were the same as Ridgway's, and like him there is no suspicion that he was the worse for liquor.

Rowland, the guard of the train, should have been keeping a better look out than he acknowledges he was doing on approaching Poulton junction. Had he known in time how close his train was to the curve, and had he, as he says he should have done, applied the continuous brake on seeing how high the speed was, he might have prevented the accident. He has been 16 years in the service and had been on duty about 7¾ hours out of a spell of 12 hours when the accident occurred.

Platform Inspector Sanderson on duty at Talbot Road station when the train started is much to be commended for having required a number of passengers who were occupying the two leading compartments of the carriage next the engine to remove to another part of the train in accordance with the London and North-Western Company's rule to that effect. The enforcement of this rule was doubtless the means of preventing the results of the accident from being more serious than they unfortunately were.

It is satisfactory to know that parliamentary powers have been obtained, by an Act passed in 1892, for making a new station at Poulton and for getting rid of the objectionable level-crossing at the station and of the curve on which this accident took place. The inhabitants have long been urging the companies to do this, and it is certainly surprising that considering the very important passenger traffic which is carried on between Preston and Talbot Road station, Blackpool, the companies should have been so long in obtaining powers to effect the improvement of the curve and the other alterations alluded to. Now, however, that powers have been obtained it is most desirable that no unnecessary time should be allowed to elapse before carrying out the work. As the gentleman who has taken the leading part in pressing the companies to make the intended alterations is of opinion from his local knowledge that valuable time has been lost in arranging for the purchase of the necessary land, the companies should be pressed to proceed with all possible despatch.

As long as the existing state of things lasts speed boards limiting the speed round the curve to six miles an hour should be erected; the junction up home-signal should be fixed at the comencement of the curve, and means taken to ensure this speed not being exceeded, the best mode of accomplishing this being to require all up trains to stop at the up home-signal and all down trains at Poulton station; this would have the additional advantage of ensuring a slow speed over the level-crossing at the station, the high speed at this crossing being one of the complaints of some of the inhabitants; the radius of the curve should be made as uniform as possible; the gauge should be increased to at least 4 ft. 9 ins., and the outer rails renewed where badly worn on the inner side of the top table.

The London and North-Western Company do not lay down rules as to specific rates of speed at particular places, but merely draw attention to the necessity of reduced speed at such places, the Poulton curve being one. They should, I think, depart from this practice in the case of such an exceptionally sharp curve as this at Poulton, where a specific speed of six miles an hour, as laid down in the Lancashire and Yorkshire Company's working time table, should be inserted in their own.

I have, &c.,

C. S. HUTCHINSON,
Major-General, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX A.

LIST OF KILLED AND INJURED.

Name.	Injuries.	Name.	Injuries.
Ridgway, Cornelius (driver).	Fatal.	Bibby, Maggie -	Right hand and arm, hip, and side bruised. Cut 2½ ins. long on right leg.
Healey, James -	Fatal.		
Marsh, James -	Fatal.	Chamberlain, Christine	Cut on right eyebrow. Bruises on back. Shaken generally.
Atherton, Annie -	Fractured left collar-bone.		
Barrett, Kate - -	Bruises on chin and head. Pain in back.	Chamberlain, Edwin	Cut on forehead and bruises.
		Chamberlain, Walter	Bruised and shaken about shoulders.
Berry, John - -	Shaken. Back injured and pain in head.	Chamberlain, Wilfred	Scalp wound. Bruises about face.
Berry, Mrs. - -	Shaken.		

Name.	Injuries.
Critchley, Thomas	Pains in neck and ankle.
Crook, J. T.	Slight scalp wound.
Culshaw, Theresa	Severe cut lip. Bruises about face and legs.
Deady, J. J.	Severe scalp wound.
Doran, John	Bridge of nose cut. Abrasions on face. Small wound on scalp.
Farr, Thomas	
Fearnley, Thomas	Pain in right elbow, shoulder, and knee.
Gee, Charles	Injury to abdominal regions.
Gobin, Joe	Broken leg.
Halliwell, Herbert	Fractured collar-bone and slight scalp wound.
Healey, Chas.	Bruises and cut about chin, nose, and hands.
Hughes, Mary Ellen	Contusion on back and bruises on face and forehead.
Kelly, Daniel	Bruised left shoulder. Shock.
Kirk, John	Pains in back.
Langshaw, Annie	Bruised face, leg, and generally.
Lowe, William	Lacerated wound of forehead. Bruises over face, body and limbs.
Marsh, Elizabeth	Bruised face and back.
Marsh, Mrs. Annie	Uninjured, but suffering from shock through death of husband.
McMahon, Michael	Serious contusions of face and head.
Munro, Annie	Severe contusion left eye. Small scalp wound.
Munro, Edith	Bruises about face and scalp.
Noble, Mrs.	Shaken.
Noble, Miss	Shaken.
Radcliffe, J.	Bruise on left thigh. Pain over ribs.
Reynolds, John	Injury to head. Concussion.
Rimmer, Mary Elizabeth.	Bruised on face. General shock.
Ruddock, James	
Rynn, John	Small scalp wounds. Bruises on shoulders and back.
Rynn, Martin	Bruise and cut on elbow. Bruised all over back.
Rynn, Thomas	Scalp wounds, and bruises on buttock.
Stapleton, Eleanor	
Waring, Margaret E.	Scalp wound. Bruised and shaken.
Watkinson, John	Broken collar-bone and injury to ankle. Right fibula fractured.

APPENDIX B.

List of Damage to Rolling-Stock.

Engine 1545.—Buffer-plank and left-hand buffer broken; one spoke in left leading wheel broken; left-hand coupling-rod bent; left-hand foot-plating and step broken; left hand sand-box and splashers broken; left and right hand hand-rail panels damaged; left side of smoke-box, chimney and door badly damaged; lagging plates left-hand side of engine badly damaged; reversing-shaft and rod bent; reversing-wheel broken; dome of boiler damaged; whistle-stand and safety-valve broken; cab badly damaged; driver's automatic-valve and fittings damaged; left-hand cylinder-cover broken; regulator rod and handle bent; pull-rod and screw of steam-brake broken.

Tender No. 1799 attached to engine 1545.—Back end of tank knocked in; left-hand side-plates and beading-plates knocked in; trailing buffer-plank broken; foot-steps broken; left-hand feed-pipe broken; left-hand brake shaft-hanger broken; front panel-plates broken; dip-pipe scoop broken.

Carriages.

Composite No. 335.—Damaged beyond repairs.

First-class No. 129.—Damaged beyond repairs.

Composite No. 904.—Both ends broken in and side of vehicle damaged; iron head-stocks of under-frame broken; continuous step-boards broken and iron work damaged.

Brake-van No. 595.—Body of vehicle scorched by fire and continuous step-board broken.

APPENDIX C.

Repairs to Permanent-Way and Signals.

Permanent Way.

	No.
Sleepers, new	4
Crossing timbers, 9, each new	9
Chairs, points, and crossing, new	6
Chairs, Ordinary, 56 lbs., new	17
Trenails, new	34
Spikes, new	34
Bolts, new	34
Keys, new	17
Fish-plates, steel, new	8
Rails, steel (84 lbs per yard) serviceable 30 feet	2
" " " 16 "	1
" " " 10 "	1

Signal Stores, new.

	No.
6-way cranks	2
10 × 14 pedestal cranks	2
9 × 10 side cranks	3
Vertical crank levers	3
Rollers for 5 rods	22
" " 2 "	2
" " 1 rod	17
	Yards.
Channel iron rod	260
	No.
Vertical crank lever frames	3
Crank frames	3
No. 3 roller frames	7

Printed copies of the above Report were sent to the Joint Companies on the 28th August.

TAFF VALE RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
19th August 1893.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 14th instant, the result of my enquiry into the circumstances attending the accident which occurred on the 12th instant close to Llantrissant junction, about 1¼ miles south of Treforest station, on the Taff Vale Railway.

In this case, as the 3.50 p.m. down passenger train from Merthyr to Cardiff, which left Treforest station at 4.43 p.m., was approaching Llantrissant junction at 4.46 p.m., the leading brake-van left the rails, and ran in this position past the junction, after which, the line being broken up, this vehicle, and the five vehicles next behind it, fell down the slope of the embankment, and were entirely wrecked, and the six following vehicles left the rails but remained on the line; the engine breaking loose from the train and running ahead for about 70 yards, and the four rear vehicles on the train remaining on the rails

The consequences were disastrous, eight passengers having been killed upon the spot, four others having since died from the injuries received, and seven passengers and five servants of the Company having been injured, some of them very seriously. Besides which, a man, named William Jones, who was not a passenger, was unfortunately killed while engaged in assisting to rescue the injured persons from the wrecked carriages.

Returns of the killed and injured, and of the damages to the permanent-way and rolling-stock, which were very great, are appended.

The train, which was fitted throughout with the automatic vacuum-brake, was made up as follows, viz. :—Tank engine (running chimney first), Brecon and Merthyr brake-van, one Cambrian third-class, one Cambrian composite, and one Cambrian third-class carriages, Taff Vale brake-van, four Taff Vale third-class, two Taff Vale composite, and two Taff Vale third-class carriages, Taff Vale brake-van, carriage truck, and luggage van.

Description.

The scene of this accident was about 200 yards south of Llantrissant junction, 10¾ miles from Cardiff, and 1¼ miles south of Treforest station. The line here runs along the east face of a hill, the bank on the outside, or east side, of the line, sloping down into the valley, being, at the point where the carriages fell over, about 30 feet in height.

There are four lines of rails, the up and down passenger lines being on the east side of the goods lines, and the down passenger line being the one nearest to the edge of the slope. Approaching from the north, the line is for some distance upon a very easy curve to the left, the radius being 1½ miles, and upon a gradient of 1 in 246 falling southwards, but the curve becomes somewhat sharper 200 yards south of Llantrissant junction, the radius at that point being 30 chains. The line was originally constructed in 1840, but the permanent-way on this part of the line was last relaid in 1885, consisting at the present time of 82 lbs. bull-headed steel rails in 30 feet lengths; 45 lbs. and 41 lbs. cast-iron chairs, each fixed by three fang-bolts, two outside and one inside; fish-plates 28 inches in length, with six bolts to each pair, the chairs at the joints being only 1 ft. 10 ins. apart; inside keys; transverse sleepers of the usual dimensions, 11 to each rail-length; and ballast of cinders and broken stone.

The engine of the train (No. 173) is a ten-wheeled engine, with leading bogie, trailing radial wheels, and four centre wheels coupled. It was built in 1891, at the Vulcan Foundry, Newton-le-Willows, and has a total mileage of 60,641 miles. It was in the shops from 19th January 1893 to 15th March 1893, when it was thoroughly repaired, a new crank being fixed to the leading coupled wheels, the flanges being turned up, and the springs put through the spring shop and tested. Since it came out of the shops it has run 14,809 miles.

The weights are as follows:—

	Tons.	Cwts.
On bogie	15	0
On leading driving wheels	15	6
On trailing driving wheels	15	0
On trailing radial wheels	9	0
Total	54	6

The wheel base is:—

	Feet.	Inches.
From bogie centre to leading driving wheels	9	10
From leading driving to trailing driving wheels	7	10
From trailing driving wheels to trailing radial wheels	6	0
Total	23	8

The wheel base of the bogie is 5 ft. 9 ins. The bogie wheels are 2 ft. 9½ ins. in diameter, the driving wheels are 5 ft. 3 ins. in diameter, and the radial wheels are 3 ft. 8¾ ins. in diameter.

The springs on the coupled wheels are under-hung, with 14 plates in each spring.

The total weight of the train was 236 tons 16 cwts. 2 qrs., and the weight on the braked wheels was 162 tons 2 cwts.

The four leading vehicles, all of which belonged to other companies, are stated to have been in good order, and the following are particulars concerning them, viz.:—

Brecon and Merthyr brake-van No. 40.—A four-wheeled vehicle, built by the Metropolitan Railway Carriage Company, Saltley, Birmingham, in June 1889. Weight 9 tons 15 cwts; wheel base 14 ft.

Last under repair and thoroughly overhauled 21st February 1893.

Cambrian third-class carriage No. 160.—A six-wheeled vehicle, built by the Metropolitan Railway Carriage Company in May 1887. Weight 12 tons 4 cwts; wheel base 18 ft. 3 ins.

Last under repair and thoroughly overhauled April 21st, 1893.

Cambrian third-class carriage No. 161.—A similar carriage to the above, built at the same time.

Last under repair and thoroughly overhauled June 29th, 1893.

Cambrian lavatory composite carriage No. 213.—A six-wheeled vehicle built by the Metropolitan Carriage Company in July 1891. Weight 13¼ tons; wheel base 19 ft. 6 ins.

Last under repair and thoroughly overhauled May 18th, 1893.

These four vehicles were through carriages from Aberystwyth, and were examined at five stations on the journey before leaving the Cambrian line at Talyllyn junction.

A plan of the line showing the position of the marks upon the permanent-way, and that of the carriages which fell over the bank is attached.

Evidence.

John William Brewer states: I am engineer for the Taff Vale Railway. I produce a plan made from actual survey of the scene of the accident on the 12th instant. Treforest station is a little over a mile north of the scene of the accident. The block-signal cabin at Llantrissant junction is 1 mile 8 chains south of Treforest. There are four lines of rails, the up and down passenger lines being on the east side of the goods lines. At a point 317 yards north of Llantrissant junction-box there is a foot-bridge over the line. From the footbridge to the junction-box the line is upon a flat curve to the left, with a radius of about a mile and a half, and upon a gradient of 1 in 246 falling southwards towards Cardiff. About 100 yards south of the box the curve becomes slightly sharper, having a radius of 30 chains. The line is an old one, dating from about 1840. The down passenger line was relaid about eight years ago, in April 1885. The rails are 82-lb. bull-headed steel rails; the chairs are 45 lbs. at joints and 41 lbs. intermediate. The joints are fished with plates 28 inches in length with six bolts in each pair, the chairs at the joints being 1 ft. 10 ins. apart. The chair fastenings are three facing-bolts, two outside and one inside. The keys are inside. The rails are in 30 ft. lengths, and there are 11 sleepers to each rail length. There is a super-elevation of 2 inches to 2½ inches. The ballast is composed of cinders and broken stone. At the time of the accident I was at my house near Penarth Dock. I got out to the place at quarter past eight. I at once made an examination of the line, the result of which is noted on the plan. Coming southwards from the bridge I found the following marks:—At 32 yards south of the bridge I found the inside of the left-hand chair chipped on the jaw. That was the first mark of any kind of anything amiss. The mark was not like the mark usually made by a wheel-flange, but the chair had evidently received a heavy blow. There was no further mark until at a point 83 yards south of the bridge, and here the ballast in the 4-ft. way was ploughed up in the centre. About two yards further south a sleeper was dented near the centre.

At 91 yards south of the bridge there was the first mark of a wheel-flange on a chair top outside the right-hand rail. The sleeper under this chair was broken. On the next sleeper the left-hand chair was marked on the top inside the rail. That was the first mark from a flange on the left side. From this point southwards there were marks of one pair of wheels running off the rails with the right wheel in the 6-ft. way, and the left wheel in the 4-ft. way, all the way to the Llantrissant junction-box. The last jarring mark made on a sleeper apparently by something other than a wheel-flange was 116 yards south of the footbridge, and about seven yards south of this an engine-spring was found against the fencing at the bottom of the embankment. Before reaching the junction signal-box the pair of wheels off the rails had passed a set of facing-points and a crossing. The left-hand switch at the facing-points had been heavily struck, but the wheels did not run away to the right hand, but were pulled straight over the guard of the crossing and the wing-rail. The first indication of a second pair of wheels being off the rails was opposite the north end of the signal-box, where a second pair had run off towards the left, there being marks outside the left rail. Apparently not more than one vehicle was running off the rails until reaching a point about 450 yards south of the bridge, where the line was broken up and the six vehicles ran over the embankment. Some of them were lying on the slope and some of them in the field below. The field is 30 feet below the level of the line, and the fence at the bottom of the slope is 65 feet away from the rail laterally. I tested the line in every possible manner and found it was in first-rate condition. There was no low joint, and the rails were true to gauge The road has not been interfered with since the accident between the footbridge and the signal-box, except that new switches were put in at the facing-points 75 yards north of the box, and the V-crossing 25 yards nearer the box was attended to.

John Morgan states: I have been about 30 years in the service, a signalman for 25 years, and at Treforest (Barry junction) for five years. There are 66 levers in my box, of which nine are spare, and five block-telegraph instruments. We work absolute block, and I have telephonic communication with the other boxes. My clock was right at 10 o'clock in the morning of the 12th instant when the time was received. On the 12th instant I came on duty at 7 a.m. to work till 5 p.m., having left duty at 6 p.m. on Friday. We work 11 hours by day and 13 by night. The following are the block-signals recorded in my book for the 3.50 p.m. train from Merthyr to Cardiff Docks:—

"Is line clear" received from Treforest Iron and Steel Works cabin at -	4.31
I accepted this signal at once.	
"Train on line" received - -	4.40
Train passed at - - -	4.43
"Is line clear" given to Llantrissant junction - - -	4.40
Accepted at once.	
"Train on line" given - - -	4.43
"Train out of section" not received till - - -	4.47

The latter signal was not given till I asked for it on the telephone, and then I was told of the accident. The train really passed me at 4.42½, but we do not book half minutes. There was nothing unusual in the train that I could see. It was a heavy train running slowly, having just started from the station. It is due to pass me at 4.30 p.m.

Thomas Preece states: I have been five years in the service, and a signalman for 10 weeks. I have been working in Llantrissant junction-box, as relief signalman, one day a week, since I was instructed in the working. There are 60 levers in the box. Some of them are spare levers, but I cannot say how many. There are five block-telegraph instruments and a telephone. On the 12th instant I came on duty at 7 a.m. to work till 5 p.m. I left duty at 6 p.m. on the previous day after 11 hours' duty. We work 11 hours by day and 13 by night. The following are the block-signals recorded for the 3.50 p.m. down train from Merthyr, which is due to pass me at 4.31:—

"Is line clear" received from Treforest	4.41
I accepted this train at once.	
"Train on line" received - -	4.44
"Train passed" - - -	4.46
"Is line clear" given to Willoford -	4.43
Accepted at once.	

I did not pass the train out of section signal until I was asked for it on the telephone. I gave it at 4.48. I lowered my signal for the train after receiving line clear from Willoford at 4.43. I watched the train approaching. I saw it come under the footbridge, at which time I noticed nothing amiss with it. I continued to watch it. I saw nothing wrong until immediately after the train had passed my down home-signal, and then I saw that the leading wheels of a brake-van, next the engine, were off the rails towards the 6-ft. side. I had a white flag in my hand at the time, and I waved it towards the driver violently up and down. I saw the fireman looking out on my side of the engine and looking back along the train. Just after I waved the flag steam was shut off. I should say the engine was then just between the junction points and the first crossing. There was still only one pair of wheels off the rails. When the van reached the crossing opposite the box I saw the trailing pair of wheels leave the rails. They ran over the left rail towards the outside of the line. I did not notice what the driver was doing at that time. I could not say whether or not the brakes were on. I cannot remember seeing steam applied again on the engine. I did not watch the driver, as I was watching the van. I should estimate the speed of the train when it passed me at about 30 miles an hour. That is about the usual speed at that point for this train. There are other trains which run faster, those which do not stop at Treforest. I looked after the train. I cannot say exactly when the other vehicles left the rails, but I saw a portion of the train run over the bank. I at once blocked all roads, and I sent notice on the telephone to Treforest and Willoford, and told what had happened. My clock was right when compared at 10 o'clock that morning. After the accident the fireman came to my box and asked if the road was clear, and if it was right for them to run to Cardiff for assistance and doctors. I told him it was clear, and the engine went away. I gave it "On line" at 4.58. Both lines were fouled by the accident.

William Durston states: I have been about 27 years in the service, and a driver for over 13 years, accustomed to drive all the time on the main line, which I know well. On the 12th August I came on duty at Cardiff station at 1 p.m., to work till 8.48 p.m. I had left duty on the previous day at midnight, after about 9 hours and 40 minutes duty. My engine (No. 173) is a 10-wheeled tank-engine, with a four-wheeled leading bogie, four coupled wheels, and radial trailing wheels. I was driver of the 3.50 p.m. down train from Merthyr. I was turned at Merthyr as usual, and was running chimney in front. I started from Merthyr with a long train, but I cannot say exactly how many I had on. I ought to be told by the guard how many, but I only got back to my train just before it was time to start. My engine is fitted with the automatic vacuum-brake, working blocks on the four coupled wheels of the engine. I believe all the train was fitted, but cannot say for certain. Anyhow, the brake was working properly, and I used it at every station I stopped at, about six in number. I tested it before starting, and was running with 21 inches or 22 inches of vacuum.

I believe that there was some change in the make up of the train at Aberdare junction, but I do not know exactly what the change was. We started from Merthyr at right time. We arrived at Aberdare junction at 4.15, and left at 4.24, which is a little late. We stopped at Pontypridd and Treforest. The signals were right all the way. We are allowed six minutes to run from Aberdare junction to Pontypridd, and we took that time exactly. I think we are allowed two minutes from Pontypridd to Treforest, and we took three minutes according to my book. I was not running to make up time. There is a rule forbidding us to do so, which I am always careful to observe. At Treforest I used my brake to stop with, and had 22 inches or 21 inches of vacuum when starting. The Llantrissant junction signals were all off for me, and I proceeded at my usual speed. I calculate my speed at the footbridge was about 30 miles an hour. Somewhere between the footbridge and the down home-signal at Llantrissant junction I felt a knock under the foot-plate, somewhere on the left-hand side. Only one knock. I was about to shut off steam when I looked round with my hand on the regulator, and I saw the leading van was off the rails. I cannot say whether all the wheels were off, but it was off towards the left-hand side as we were running. That was before we reached the junction home-signals. I am almost certain that the van was off towards the left. I have not seen the marks on the permanent-way, and am not aware that they show that the wheels were off towards the 6-ft. side. I then shut off steam at once. I had shut it off before reaching the junction home-signals. I was about to apply the continuous-brake when I saw that it would not do, because I would have pulled the train up too suddenly. I thought it better to keep the van straight. I put on steam with this object, and shut it off and applied it a second time momentarily, and shut it off again. I think by that time we had passed the box. I twice pulled the van straight. I was about to apply the steam the third time when I felt that the coupling between my engine and the train had parted. The engine ran for 60 or 70 yards further before coming to a stand, the brake having gone on automatically. Almost immediately after I felt that I had parted from the train I saw the van go over the bank, followed by several other vehicles, but I cannot say how many. I cannot say whether any of these other vehicles had been running for any distance off the rails before going over the bank. I could not see past the van. After the accident I backed towards the train, and got out all the jacks and bars we had, to give as much assistance as possible. I thought it best then to run as fast as possible to Cardiff to get assistance, so I sent my fireman to the signal-box to ask if we might go, and then started at once, after getting permission to do so. I went then to the engine-shed. I had gone round the engine immediately after we stopped, and saw that the bogie and machinery and the radial wheels were all right, and I did not miss anything at that time. I did not feel the engine running roughly on the way to Cardiff, but when I looked at the engine on the pit in the engine-shed I found that the spring of the left trailing coupled wheel was missing. One of the spring links was fractured. I think our speed when passing the junction signal-box was about 30 miles an hour. That is as near as I can estimate. I did not see any flag waved from the junction signal-box. I cannot say if my fireman did. I felt nothing whatever wrong with the line before I felt the first knock. The engine was running quite smoothly, and the line was in good order. I have considered the matter since the accident, and I believe that I took the wisest course in acting as I did in trying to pull the van straight. Supposing I were again placed in a similar position I would act in the same way. Before I left Merthyr I carefully examined my engine when over a pit. Both I and my mate were underneath. There was nothing whatever wrong that I could see. Everything was in position. If there had been a slight crack or flaw in the link which gave way I could not have seen it. The engine is a good running engine. I have driven it off and on for two years. I heard the knock I have spoken of as well as felt it. That was all we felt on the engine, which continued to run quite steadily. I heard the noise from the van running over the sleepers.

James Taylor states: I have been over 13 years in the service, and a fireman for nearly 10 years. On the 12th August I was fireman with driver Durston. I have heard his evidence read over, and I agree with it. I did not see any flag waved from Llantrissant junction signal-box I am still of opinion that the steps taken by my driver, after seeing the van off the rails, were the best he could have taken, and if I were a driver I would act in a similar manner.

Thomas Thomas states: I have been nearly 15 years in the service, and a guard's brakesman on the main line for over five years. On the 12th August I came on duty at 3.15 p.m. to work till midnight. I left duty on the previous day half an hour after midnight, after working from 3.15 p.m. I was guard in charge of the 3.50 p.m. down train from Merthyr. The train was made up as follows:—Tank-engine, Brecon and Merthyr luggage van, Cambrian third-class, Cambrian composite, Cambrian third-class, Taff Vale brake-van, four Taff Vale third-class, two Taff Vale composites, two Taff Vale third-class, a Taff Vale brake-van in which I was riding, and a carriage-truck at the rear. There was a guard in the front Taff Vale brake-van. The whole train was fitted with the automatic vacuum-brake in working order. I did not tell the driver, before starting, exactly what the composition of the train was, but I was aware that he knew he had a long train. The carriage truck was put off at Aberdare junction and we took on another carriage truck, and a luggage van at the same place. These two vehicles were behind my van, but were fitted with the brake. We left Merthyr at right time, and arrived at Aberdare junction at 4.15, one minute late. We lost one minute at Quakers Yard in station work. We left Aberdare junction at 4.23, six minutes late, having lost time in taking on vehicles. We arrived at Pontypridd at 4.29 and left at 4.37, 11 minutes late, having lost five minutes in station work owing to heavy traffic. We arrived at Treforest at 4.40, and left at 4.41, 12 minutes late. We lost one minute in running from Pontypridd to Treforest. After starting from Treforest my gauge was showing 22 inches of vacuum. I cannot say that I saw the signals at Llantrissant junction. I knew of nothing being wrong until the train was being pulled up. The brake came suddenly on, and we came quickly to a stand. Our speed before the brake came on was from 25 to 30 miles an hour. No more. I did not note the exact time when this happened, but I should say it was two or three minutes after leaving Treforest station. I was alone in my van. The other guard was riding in the front Taff Vale van. I did not know what had happened until I looked out. After the brake had come suddenly on, I looked out on the left side, and I saw the Cambrian coach going over the bank. My van came to a stand before reaching the foot where these coaches went over. I got out and found my train in the following position:—The engine, which had parted from the train, had run some distance ahead. The Brecon and Merthyr van, the three Cambrian coaches, the front Taff Vale van, and one third-class Taff Vale carriage, were over the bank, although I cannot exactly describe the positions. The five next vehicles were on the line but off the rails. The five rear vehicles were on the rails. The front guard was in the van which went over the bank. I went and opened the doors of the carriages which remained on the line. The first man I saw was the Brecon and Merthyr guard who had been in the Brecon and Merthyr van when we left Merthyr. He

was injured, and I helped him up the bank. After that I went down the bank and helped a little at the wreckage, and then came up again to look after the train and the mail bags. I had been to the signal-box to see if assistance had been sent for. I then went back to the van and waited. There were a number of people, passengers and others, who were assisting at the wrecked carriages. The weather was fine. We had not made up any time in running. I should guess that we ran for about a train's length before coming to a stand after the brake went on. After leaving Aberdare junction, which is a one-sided station with the platform on the up side of the line, the doors on the off side of the train were, in accordance with instructions, locked, and they were locked at the time that the accident happened. None of the doors on the left side of the train were locked. The accident happened so instantaneously that I am convinced that no person who was in one of the carriages which rolled over the bank would have had time to get out on the off side with safety.

David Thomas states: I have been between 16 and 17 years in the service of the Brecon and Merthyr Railway Company, and a goods guard between 14 and 15 years. On the 12th August I came on duty at 9 a.m. to work till 5 p.m. On the previous day I had left duty at about 6 p.m. having come on duty at 10.30 a.m. I came from Aberystwith to assist with the luggage and through passengers in a Cambrian train which left at 9.30 a.m. There were three through coaches and a van which were attached to the Taff Vale train leaving Merthyr at 3.50 p.m. The Brecon and Merthyr van was next to the engine, and I was riding in it. At Treforest I changed into the front Taff Vale van. I was on the platform at Treforest, and, while I was engaged in shutting the doors of the Cambrian carriages, which were in my charge, the train started. Not being able to get to my van I got into the Taff Vale van. The train was a long one and my van was past the end of the platform, which made it more difficult for me to get to it. The Taff Vale guard, after leaving Treforest, was sitting in the guard's projection on the left side looking ahead. I was standing up in the middle of the van. He called out to me, "Look out!" and I jumped towards the other seat. Before I could do anything the train was over the bank. Before it went over the bank I did not observe that the brake went on. I had not looked at the gauge in the van after leaving Treforest. I was knocked over. Someone helped me out, and the first thing I remember was seeing the coaches all smashed up. The van I had been in was near the bottom of the bank, and so were all the Cambrian coaches. There was a brake-valve in my van, the Brecon and Merthyr van, and I would, if I had been there, have applied the continuous-brake. If I had been in my van and had felt that I was off the rails I might have applied the brake slightly to warn the driver, but I would not have put it hard on. There were a good number of passengers in the Cambrian coaches. One of them was a six-wheeled coach. I think they were all six-wheeled coaches. I estimate the speed at 25 or 30 miles an hour at the time the accident happened.

William Williams states: I am sub-inspector of police in the service of the Taff Vale Railway Company, and have been 28½ years in the service. On the 12th August I was riding as a passenger from Quakers Yard to Cardiff in the 3.50 p.m. train. I was riding in a second-class compartment in the tenth coach from the engine. The train was well-filled after leaving Pontypridd, but was not crowded. The first thing that called my attention to anything being wrong was the train drawing up, much as it does when stopping at a station. Before it commenced to draw up I should say the speed was about 30 miles an hour. I travel about a good deal, often 100 miles a day, and consider that I am competent to estimate speed. The carriage I was in left the rails towards the right, and ran for about a length and a half before coming to a stand. I got out, and, remembering that a Cowbridge train was due, I went back to look at the junction facing-points, which were broken up to some extent, and I then went to the signal-box and told the signalman not to allow any train to approach. I then went for the foreman platelayer to put the points right. I saw a number of people assisting at the wrecked carriages, but did not go there myself, and kept in communication with the signal-box.

Charles Payne states: I am a mineral guard, and have been 15 years in the service of the Taff Vale Railway Company. On the 12th August I was a passenger in the 3.50 p.m. train, which I joined at Treforest. I was riding in the sixth vehicle from the engine. The compartment I was in was full. After leaving Treforest there was nothing unusual in the speed, which was not over 30 miles an hour at any time. The first thing which called my attention to anything being wrong was a sudden application of the brake. Immediately, only a second, afterwards the carriage I was in was over the bank. I do not know whether this carriage rolled over or not, but I found myself on the bank about half way down. The carriage was broken to pieces, but the frame of it was on the bank above where I was lying. I was not injured to speak of. I saw my brakesman, who had been sitting next me, about two yards lower down the bank. I called out and asked him if he was hurt, and he said "No," he did not think so. He came and helped me to carry an injured man down into the field. We then both went to assist the other injured persons in the wrecked carriages. Some of these carriages were on the bank, and others were at the bottom. They were mostly broken up.

Harvey Phillips states: I am a driver, and have been 33 years in the service, and over 22 years a driver. I was a passenger in the same compartment as the last witness, and agree with his evidence. I was myself after the accident at the bottom of the bank, with part of the body of the carriage on the top of me. I was cut about the head and bruised, but I went and gave what assistance I could at the wreckage. One of the persons who were killed was taken out from under the bed of the carriage I had been riding in, and I believe I had seen him in the carriage.

John Davies states: I am ganger in charge of the length upon which the accident happened, and have been about 15 years in the service. I had walked over the line at about 7 a.m. on the 12th August, and I had been on the line where the accident happened up to about half-past 12. Being Saturday, we left duty at 1 p.m. The line was in good order and true to gauge, and the points and crossings were in good order. The super-elevation on the curve is about 2½ ins., and is even and regular. I was at Treforest station when the accident happened, and was close by the station-master when he heard news of the accident. I went to the spot as soon as possible. I examined the line as I walked along. About 30 yards south of the footbridge was the first mark I observed on the permanent-way, and that was on a chair inside the left rail. It was the mark of a heavy blow. Here and there were marks all the way to the signal-box at Llantrissant junction. I cannot say whether there were marks of more than one pair of wheels off the rails. Where the carriages had gone over the bank the line was broken up. I went down first to the wreckage, and then came up to the junction facing-points, which had been knocked about a good deal, to put them right for the Cowbridge train which was following. I put a man in charge of the points, and then went back to help to get at the injured people. I picked up a broken bolt on the permanent-way in the 4-ft. way south of the first marked chair.

Tom Hurry Riches states: I am locomotive superintendent of the Taff Vale Railway. I produce a tracing of engine No. 173. This engine is a ten-wheeled tank engine, with leading bogie, and trailing radial wheels, and four coupled driving-wheels, and with inside cylinders. It was built at the Vulcan Foundry, Newton-le-Willows in 1891, and has a total mileage of 60,641 miles. It was last out of the shops on the 15th March 1893, having gone in on the 19th January 1893. It was throughly repaired, had a new crank axle fitted on the leading coupled-wheels, had the wheels turned up, and the springs put through the spring shop and tested. Since that time it has run 14,809 miles. The wheel base of the bogie is 5 ft. 9 ins. From the rear bogie wheel to the leading driving wheel is 6 ft. 11½ ins. From the bogie centre to the leading driving wheel 9 ft. 10 ins. From the leading to the trailing driving wheel 7 ft. 10 ins. From the trailing driving wheel to the trailing radial wheel 6-ft. The weights are:—

	Tons.	cwts.
On bogie	15	0
On leading coupled wheels	15	6
On trailing „	15	0
On radial wheels	9	0
	54	6

The springs on the coupled wheels are underhung springs, with 14 plates each. The buckle is lengthened out at the top so as to have a 1½-in. pin passed through it, which is secured by a split pin in a groove or slot. At the bottom of the axle-box there is a hanging ⅞ link, secured to the box by an inch-and-a-half pin. The top of the buckle passes inside the ⅞ link and is secured by the first-mentioned pin. The jaws of the ⅞ link are 1 in. thick, and ⅝ in. wide at each side of the pin, giving a total area equal to 3⅛ square inches. Each of these links has to carry the half of 15 tons, less the weight of wheel and axle, axle-box and outside connecting rod, or a weight of about 6½ tons. This is an ordinary and a strong attachment. I only remember one case of the link breaking in 20 years' experience, and that was on a mineral engine about 10 years ago. That was a weaker link, and I have strengthened all links since. In this case the spring did not fall. Since the accident I have examined No. 173 engine carefully. I did so on Sunday, and again to-day. It is in perfect order except that the left trailing driving-wheel spring is off. I saw this spring, which was picked up on the side of the line. The top leaf was doubled up considerably, and several of the other leaves were open. The buckle was shifted but not broken. The 1½-in. pin was in place, and so was the split pin. Both the hanger links or spring pillars were broken off, and they also have been picked up on the line. As regards the axle-box the only damage was the fracture of the hanging link at the point where the pin passes through it. The bottom piece of one side of the jaw of this link has been picked up. On one side of it the fracture is quite fresh, but on the other there was an old flaw nearly all the way through the metal. This cannot have existed at the time that the springs were in the spring shop for testing, and must have commenced since, but when it is impossible to say. From the position of the flaw it could not have been detected by examination when the spring was fixed, but only when it was in the shops, taken down for thorough examination. On the 12th August I was in the shed when the telephone message announcing the accident was received, at about 5 o'clock or a little before. I at once got ready the break-down train, and went out with all the men available. I picked up a doctor who was coming up on a trolly from Willsford. When I got to the place there were a large number of persons giving assistance. Several of the injured people were still in the wreckage, but were got out as soon as possible. I took charge of the operations, but there were too many people to control properly. During the operation one of the persons who were assisting was killed by a carriage, which had been lifted to release people who were underneath it, slipping and falling on him. The bottom of the buckle stands 9½ ins. above the rail, that would be about 11 ins. above the jaw of the chair. On the fracture of the link the spring would be free to drop a distance of 2½ ins., but the top leaf of the spring would be sure to bend from the recoil and let the vehicle fall lower down. It would appear that this is what happened, and that the first mark found on the chair inside the left rail was caused in this manner. There is one fitter on duty by day and night to examine thoroughly every passenger engine before it goes out.

Richard Perry states: I am a fitter and have been 10 or 11 years in the service of the company. I was on night duty on Friday 11th instant. I thoroughly examined engine No. 173 before it went out on the following morning. I did so at about midnight. As far as I could see everything was in perfect order. I have seen the engine since the accident. The left-hand trailing driving-wheel spring is broken off. The bottom of the hanging link was broken across the eyes. I thoroughly examined this spring and saw no flaw. I do not see how from the position it was in I could have detected a hair crack in the place where the crack gave way.

Elijah Berwick states: I am a fitter in charge of the fitting and erecting shop, where No. 173 engine was repaired in March last. I am satisfied that it was in perfect order when it left the shop. It is impossible that one of the jaws of a hanging link of a spring could have been flawed when the engine left the shops. If such a flaw existed then it must have been detected, as the springs underwent a thorough examination.

Elias Thorogood states: I am a driver, and have been 40 years in the service. On the 12th August I was driving engine No. 173 from 7 a.m. to 1.7 p.m. I examined it before I took it out of the shed, and again at about 12.25 at Cardiff docks. Everything was in perfect order as far as I could see.

John Cameron states: I am in charge of the carriage and waggon depôt of the Taff Vale Railway Company, under Mr. Riches. I was informed of the accident at about 6.15 p.m., and went out to the place, arriving shortly after 7 p.m. I took a note of the position of the carriages composing the 3.50 p.m. train. The Brecon and Merthyr van was lying with its wheels uppermost on the bank near the foot of it, and with the body quite broken up. No. 160 Cambrian third-class carriage was the next vehicle southwards. It had been upside down on the bank halfway down, but had been turned over before I got there. The body was broken up. No. 161 Cambrian third-class carriage was next southwards. It was near the fence. It had also been bottom upwards, but had been turned over, and the body was broken up. No. 213 Cambrian composite was several feet further south. It had been bottom upwards, with the top near the edge of the slope, and at right angles to the line. The frame had been turned over and rolled to the bottom of the bank. The body had separated from the frame, and was lying on its side outside the fence, with one end destroyed. The next was No. 255 Taff Vale passenger brake-van. That had been upside down, at right angles to the line, and near the top of the bank, but had been turned over and run down the bank. No. 173 Taff Vale third-class carriage was lying parallel with the line halfway down the bank with the wheels uppermost. No. 309 Taff Vale third-class carriage was on the line, but off the rails towards the 6-ft. way part of the up line. No. 301 Taff Vale third class was on the line, but off the rails. No. 313 Taff Vale third-class, No. 24 Taff Vale composite, No. 28 Taff Vale composite, and No. 305 Taff Vale third-class carriages were also in a similar position. Of the carriages still on the line, but off the rails, only No. 309 was much damaged.

Conclusion.

The cause of this deplorable accident is very clearly indicated by the foregoing evidence, and by the marks which were plainly to be seen upon the permanent-way when I made my inspection of it.

The first mark of anything amiss was at a point 32 yards south of a footbridge which crosses the line 317 yards north of the centre of Llantrissant junction signal-cabin. Here the inside jaw of the chair under the left-hand rail was broken, evidently from a heavy blow, the mark being of a different character to that usually made by the flange of a wheel running off the rails.

About 14 yards south of this point a spring pin washer, and cotter, were found upon the slope of the embankment, but there was no other mark upon the permanent-way for a further distance of 35 yards, at which point the ballast was ploughed up in the 4-ft. way.

Four yards south of this a sleeper was splintered; six yards further south a sleeper was broken, and the chair on the left side was marked by the flange of a wheel inside the left rail, and on the next sleeper southwards the chair under the right rail was marked by a wheel-flange outside the rail. Two spring-pins were found in the 4-ft. way, 10 yards south of these first marks of any wheel having left the rails, and a washer was picked up on the slope 14 yards further south, immediately opposite to the last mark on the 4-ft. way of anything being dragged along it, an engine spring being found at the bottom of the slope 21 yards nearer to Llantrissant junction. This spring had both the spring-pillars broken off, and the top plate was at one end bent nearly double, and it was the left-hand trailing driving spring of the engine of the 3.50 train, which spring was found to be missing when the engine was examined after the accident.

It was an underhung spring, and it was attached to a T link hung from the axle-box, by means of a $1\frac{1}{2}$-inch pin, passing through a hole in an extension at the top of the buckle of the spring, and through two holes in the jaws at the bottom of the hanging link. These jaws were broken through opposite to the pin holes, and the bottom piece of one jaw has been picked up.* The fractures are fresh, except that on one side of one of the jaws, in which there was an old growing flaw extending over nearly the whole surface of the fracture.

There can be no doubt that the accident was due to the fracture of this T link, upon which the spring dropped, and, owing to the bending of the top plate, dropped sufficiently far for the bottom of the buckle to strike the inside jaw of the first chair which was found to be broken, with such violence that the spring-pillars were broken, and the spring fell off, being then dragged along under the engine, grooving the permanent-way and sleepers, until it got under the leading van, and caused the leading wheels of this vehicle to leave the rails towards the right-hand side, at a point 60 yards south of the first broken chair.

From this point to the centre of Llantrissant junction signal-cabin, a distance of 225 yards, it is perfectly clear, not only from the marks upon the permanent-way, but also from the evidence of the signalman in the cabin, who was watching the train, that only this one pair of wheels was running off the rails. At the crossing opposite to the cabin the signalman states that he saw the trailing wheels of this leading vehicle—a four-wheeled Brecon and Merthyr brake-van—leave the rails towards the left-hand side, and his statement is again corroborated by the marks on the permanent-way, which show that south of the signal-cabin, for a distance of 143 yards, there were two pairs of wheels running with the left wheels outside the left-hand rail, but no other wheels whatever off the rails.

At a point 143 yards south of the signal-cabin the line was disturbed, evidently by the brake-van swerving across it when the coupling between it and the engine parted, as is described by the driver, and then this vehicle and each of the five vehicles behind it in succession ran off over the edge of the slope, and were upset in the positions shown on the attached plan, being found in exactly the reverse order to that in which they had been running. The six next vehicles were also derailed, but were kept upon the line, having, with the four rear vehicles, which remained upon the rails, been brought to a stand by the action of the automatic vacuum-brake.

The driver, in his evidence, states that between the footbridge and the junction home-signals he felt and heard a sudden knock under the left-hand side of the engine, evidently that caused by the dropping of the spring on to the chair; that he went to shut off steam, but before doing so looked back and saw the leading wheels of the

* Since this Report was written I have been informed that the bottom piece of the other jaw has been picked up, and shows no sign of any latent flaw.

brake-van next to the engine off the rails towards the left-hand side (this is clearly a mistake, as both the marks on the permanent-way and the evidence of the signalman show that they were off to the right-hand side); that he then shut off steam, but reapplied it and shut it off again twice, in order, as he states, to pull the van straight, and succeeding in doing so, as is shown by the fact of the vehicle being kept parallel to the rails of the down line at the facing-points of the junction and the crossing south of it. He was about to apply steam again, after passing the signal-cabin, when the coupling behind his engine parted, and he ran ahead, being stopped in a short distance by the automatic application of the continuous brake, which brake he had not previously applied at all, believing that it would be dangerous to stop his train too suddenly.

The speed of the train, therefore, at the time that the final catastrophe took place had been little, if anything, reduced from the 30 or 35 miles an hour at which the train had been running when the first vehicle left the rails.

No blame for carelessness or lapse of duty can, in my opinion, be attributed to any servant of the Company for this accident. The permanent-way was in good order, the engine was properly constructed, and had been carefully overhauled, the speed was certainly not excessive, and the flaw in the hanging T link on the axle-box of the trailing driving-wheel of the engine, which led to the fracture of this link, and was the real cause of the accident, was in such a place, and of such a nature, that it could not well be discovered while the spring was still in position on the engine.

Nevertheless, although I do not blame the driver, who deliberately acted in the manner which he considered, and still considers, to be that best calculated to avert disaster, after seeing that the vehicle next to his engine was off the rails, I cannot avoid the conclusion that, in taking the action he did, he committed an error of judgment, in not making use of the continuous-brake to reduce the speed of his train.

From the point where he first became aware of anything being wrong, to the point where the leading brake-van broke away from the engine, and fell over the bank, up to which point only one vehicle had left the rails, there was a distance of about 368 yards, for the first 225 yards of which there was only one pair of wheels off the rails, and therefore, with the automatic vacuum-brake in good working order upon all the vehicles in the train, and with over two-thirds of the total weight of the train upon braked wheels, the driver had it in his power to reduce the speed to a minimum, or possibly to have stopped it altogether, before reaching the point where the line was broken up and the other vehicles left the rails.

No doubt, in the days when the only brakes upon a train were the hand-brakes upon the tender and the guard's van it was unsafe for a driver, seeing one of the vehicles in his train off the rails, to stop his engine suddenly, for there would then be great risk of some of the vehicles behind the derailed vehicle over-running those in front, and of these vehicles being telescoped or derailed, but the conditions are now quite different, for, with a good continuous-brake, judiciously applied, the whole of the vehicles of the train can be braked in so short a time that there should be no danger of anything of the kind.

In my opinion the proper course for the driver to have taken in this case would have been to whistle at once, for the brakes to be applied at the rear of the train, and then, if the guard had not already done so, to apply the continuous-brake, not too violently at first, but gradually, and if he had acted in this manner I firmly believe that the accident would have been far less disastrous, and that, possibly, there would have been no loss of life at all. As I have before stated, however, I hold that, having done what he thought was best, according to his experience, this driver should be held free from blame, but it would be well for the Company to consider the question carefully, and to draw up some further instructions as the use of the brake, for the guidance of drivers who may be placed in a similar dilemma.

It appears from the evidence that the off-side carriage-doors on the train were, as is proper and customary, locked, and although no doubt this rendered it impossible for any passenger to open these doors with the view of jumping out, I do not think that the fatalities were increased on that account, for the evidence shows that, after the carriages behind the leading-van left the rails, they fell over the bank so instantaneously that it would have been hardly possible for anyone to have jumped out, while, looking at the position in which the carriages lay after the accident, it is probable that anyone doing so would have been killed or injured.

It should be remarked that the Brecon and Merthyr guard, who had been riding in the leading brake-van, might have applied the continuous-brake upon finding his van off the rails if he had still been in it, and it is in this respect perhaps unfortunate that, after attending to his work upon the platform at Treforest, he was unable to reach his van when the train started, and had therefore to jump into the front Taff

Vale van. If, however, he had been in his own van and had not taken any action to pull up the train, which judging from his evidence is doubtful, he would almost certainly have lost his life, for his van was broken to pieces.

In conclusion I must call attention, first, to the fact, that the rule that the guard should, before starting and at every change of the make up of the train, acquaint his driver of the composition of the train, was not attended to upon this occasion; and, secondly, to the hours of work of the signalmen in Treforest and Llantrissant junction-cabins, for it appears that these men work 11 hours on one shift and 13 hours on the other, a division of time to which objection has often been taken.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

F. A. Marindin,
Major, R.E.

APPENDIX.

List of Killed.

No.	Name.	Address.	Age.
			Years.
1	Wm. Thos. Shapland	Llandaff - -	27
2	John Davies -	4, Lake St., Ferndale -	26
3	Wm. Jones (not a passenger).	Ynysybwl - -	55
4	George Brown -	Scott St., Cardiff -	38
5	Mary Williams -	Borth, Cardiganshire -	47
6	Wm. Albert Williams	Cross Inn - -	28
7	Dd. Davies - -	Ystrad - -	59
8	Wm. Williams -	Ferndale - -	25
9	Wm. Attewell -	A travelling gipsy -	25
			Mths.
10	*Wm. Williams -	34, Coburn St., Cardiff -	8
11	*Henry Simmons -	Tongwynlais - -	—
12	*Wm. Lewis - -	Gwaelodygarth -	—
			Years.
13	*Catherine Llewellyn	Llantwith - -	19

* Died subsequently, from the effect of injuries received.

List of Injured (Passengers).

No.	Name.	Address.
1	Richard Adams	101, High Street, Pentre.
2	John Williams -	22, Queen Street, Barry.
3	Jenkin Jones -	2, Arabella Street, Cardiff.
4	Wm. Edmunds -	Walnut Terrace.
5	James Lewis -	Canton, Cardiff.
6	Caleb Giles - -	North Road, Cardiff.
7	Henry Harvey -	Trealaw.
8	John Jacobs - -	73, Cairns Street, Cardiff.
9	Maurice Stahl -	Raper's Hotel, Cardiff.
10	Wm. Hy. Prosser -	Pontypridd.
11	Edward Williams -	101, Habershaw Street, Cardiff.
12	Lewis Howells -	Taff's Well.
13	Whittock Williams -	6, High Street, Porth.
14	Edward Williams -	34, Coburn Street, Cardiff.
15	Mary Ann Williams	34, Coburn Street, Cardiff.
16	Robert Jones -	2, Theseger Street, Cardiff.
17	Jane Pugh - -	Duffyn, North Wales.
18	Louisa Thomas -	109, Newport Road, Cardiff.
19	Emily Thomas -	109, Newport Road, Cardiff.
20	Ann Eveleigh -	96, Pearl Street, Cardiff.
21	Martha Woodward -	11, Pembroke Street, Aberdare.
22	Thomas Jones -	Tongwynlais.
23	Jesal Morgan -	17, High Street, Mountain Ash.
24	Rees Phillips - -	128, Woodville Road, Cardiff.
25	Wm. Bennett -	51, Trehanault Street, Ystrad.
26	S. B. Murphy -	33, Nixon's Villas, Merthyr Vale.
27	John T. Barks -	31, Gudlys Street, Aberdare.
28	Mrs. Nott - -	Treforest.
29	Mrs. Jones - -	Weston Farm, Cadoxston.
30	Miss Jones - -	Weston Farm, Cadoxston.
31	John Williams -	42, Llantrissant Road, Cardiff.
32	Thomas Lewis -	27, Arthur Street, Ystrad.
33	Wm. Phillips -	Gracy House, Quakers Yard.
34	Evan Evans -	Pontypridd.
35	Lewis Kiddiford -	Dowlais.
36	—— Williams -	Porth.
37	Wm. Edwards -	Queen Square, Barry.
38	Henry Jackson -	Walnut Terrace.
39	Wm. Thomas -	Mardy.
40	Esther Thomas -	Mardy.
41	Mrs. Frost - -	Pwllywain Road, Pontypridd.
42	Annie Allan -	2, Park Street, Treforest.
43	Lilly Harris - -	Cardiff.
44	Florence Harris -	Cardiff.
45	Evan Wm. Murray -	13, Bland Place, Aberdare.
46	I. Mills - -	25, Albert Street. Cardiff.
47	Thomas Harris -	Woodfield Terrace, Hafod.
48	Wm. Baker -	29, West Street, Pontypridd.
49	Catherine Williams -	101, Habershaw Street, Cardiff.
50	Chas. Atkins -	10, Garst Street, Taff's Well.
51	T. Jones - -	55, Hillside Terrace, Wellstown.
52	W. Lewis - -	Taff's Well.
53	Geo. Court - -	Taff's Well.
54	Geo. Martin -	Tongwynlais.
55	Evan Williams -	Glan-lyn, Taff's Well.
56	Henry Jenkins -	New House, Taff's Well.
57	John Williams -	Taff's Well.

The injuries sustained by some of the foregoing were very slight.

The number of those whose injuries were sufficiently serious to be taken to the infirmary was 26.

The number of patients in the infirmary at this date is 16.

List of Injured (Railway Servants).

No.	Name.	Address.	Occupation.
1	Dd. Thomas -	Dowling -	Guard in the service of the Brecon and Merthyr Railway Company.
2	Henry Russell -	Whitchurch -	Brakesman in the service of the Taff Vale Railway Company.
3	Albert Henry Wigmore.	Canton, Cardiff	A relief clerk in the service of the Taff Vale Railway Company.
4	Harvey Phillips	Cardiff - -	A driver in the service of the Taff Vale Railway Company.
5	Alfred Williams	Pentyrch -	A clerk in the service of the Taff Vale Railway Company.

Of the foregoing the last three were travelling as passengers.

List of Damage to Rolling Stock.

Brecon and Merthyr Railway brake-van No. 40.—Body entirely gone; general ironwork of underframe, also bearing and buffing springs, with repairs can be used in the reconstruction; brake ironwork and materials can be used in the reconstruction (with a few exceptions); buffers all right.

Cambrian Railway third-class No. 160.—Body entirely gone; woodwork generally of underframe can be used in the reconstruction, with the exception of middle longitudes and headstocks; general ironwork, brake materials, and ironwork, also bearing and buffing springs, with repairs, can be used in the reconstruction, three new axles required, six new axle-boxes required; buffers all right.

Cambrian Railway third-class No. 161. Body entirely gone; woodwork of frame generally, with the exception of two sole-bars and two head-stocks, can be used in the reconstruction; general ironwork, brake materials, also bearing and buffing springs, with repairs, can be used in the reconstruction; three new axles required, six new axle-boxes required; buffers can, with repairs, be used again.

Cambrian Railway composite No. 213.—Body, one-third gone and beyond repairs, except trimmings, &c., which can be used in reconstruction; woodwork of underframe except two head-stocks can be worked in; general ironwork, brake materials, also bearing and buffing springs, with repairs, can be used in the reconstruction; three new axles required, six new axle-boxes required; buffers, with repairs can be used again.

Taff Vale Railway van No. 255.—Underframe entirely made of iron; body entirely gone; general ironwork, brake materials, also bearing and buffing springs can, with repairs, be used in the reconstruction; three new axles required; buffers, with repairs, can be used again; four new axle-boxes required.

Taff Vale Railway third-class No. 173.—Body entirely gone; woodwork of underframe with the exception of two head-stocks, two mid-longtitudes, two diagonals, and two end longitudes can be used in the reconstruction; one new axle required; four new axle-boxes required; buffers, with repairs, can be used again; general ironwork, brake materials, also bearing and buffing springs can, with repairs, be used in the reconstruction.

Taff Vale Railway third-class No. 309.—All oil-traps missing; top step-board damaged; one new end and quarter with door required; one end to be repaired, two panels and body sill required; bottom step-boards damaged; two end vacuum-pies damaged; six new axle-boxes required; step-irons bent, requires lifting.

Taff Vale Railway third-class No. 301.—Two top and bottom step-boards broken; three step-irons broken; one small hole through end panel, requires lifting; two new axle-boxes.

Taff Vale Railway third-class No. 313.—End step damaged, requires lifting; and three new axle-boxes.

Taff Vale Railway composite No. 24. One top step-board broken, requires lifting; and three new axle-boxes.

Taff Vale Railway composite No. 28.—One bent axle, requires lifting, and two new axle-boxes.

Taff Vale Railway third-class No. 305.—Two lamp-irons broken; two coupling-hooks broken (these are to suspend coupling when not in use), requires lifting, and one new axle-box.

Taff Vale Railway third-class No. 307.—One coupling-hook broken (this hook is to suspend coupling when not in use), requires lifting.

Taff Vale Railway brake-van No. 231.—Nil.

Engine No. 173.—Left-hand trailing driving-spring broken off and damaged.

Particulars of Materials Renewed.

At point where coaches rolled over :—
- 120-feet road complete.
- 24-feet sleepers and chairs complete.
- 50 yards wire to three up distant-signals.
- 50 yards fencing.

Between scene of accident and overbridge.
- One point-tongue at facing-points.
- One T locking-bar 12 feet at facing-points.
- One T crank and connection from T crank to lock-bar at facing-points.
- One stretcher lock-bar at facing-points.
- One plunger casting at facing-points.
- One detector rod at facing-points.
- One connecting-rod to point tongue at facing-points.
- Ten mid-sleepers with chairs complete.
- 27 mid-chairs.
- Three joint-chairs.
- Five point-chairs.
- Two crossing-chairs.
- 90 coach-screws 6 ins. by $\frac{3}{4}$ in.

Printed copies of the above Report were sent to the Taff Vale, the Cambrian, and the Brecon and Merthyr Railway Companies on the 20th September.

COPY OF THE REPORT

BY

MAJOR MARINDIN, R.E., C.M.G.,

ON THE

INQUIRY INTO THE CIRCUMSTANCES ATTENDING THE COLLISION WHICH OCCURRED ON THE 14TH OCTOBER 1892, NEAR AUCHNASHELLACH,

ON THE

HIGHLAND RAILWAY,

AND OF THE

CORRESPONDENCE BETWEEN THE BOARD OF TRADE AND THE RAILWAY COMPANY THEREUPON.

Presented to both Houses of Parliament by Command of Her Majesty.

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1893.

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Report to the Board of Trade by Major Marindin, R.E., C.M.G.

HIGHLAND RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, Whitehall, London, S.W.,
November 12, 1892.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 19th ultimo, the result of my enquiry into the circumstances attending a collision which occurred on the 14th ultimo, near Auchnashellach, on the Dingwall and Skye branch of the Highland Railway.

In this case, when the engine and tender of the 4.20 p.m. mixed train from Dingwall to Strome Ferry were uncoupled at Auchnashellach for shunting purposes at about 6.45 p.m., the whole of the train (consisting of four loaded goods waggons, two close goods vans, one empty goods waggon, one empty cattle waggon, one loaded horse-box, one first-class, one composite, and one third-class carriages, and brake-van), ran back down a steep incline for a distance of about 1,600 yards, came to rest upon a rising gradient about 1,000 yards from the foot of the incline, and then ran forward again towards Auchnashellach, meeting the engine and tender, which had run back slowly from Auchnashellach to pick up the train, and had come nearly to a stand.

The collision was not a violent one, but one waggon loaded with sleepers was thrown off the rails, and the line was blocked.

There were nine passengers in the train, and eight of them complained of injuries, none of which were, it is stated, serious.

There was no damage to the permanent-way, and the only damage to the rolling-stock was to the leading waggon which struck the tender of the engine, and the body of which was broken up.

Description.

Auchnashellach is a one-sided station on a single line 40½ miles from Dingwall, with a platform about 75 yards in length, and one siding on the up side of the line, with points facing towards down trains, about 30 yards west of the east end of the platform.

The point of collision was about 1,800 yards east of Auchnashellach station, upon a gradient of 1 in 375, rising eastwards, and it is supposed that the runaway train came to rest at, and turned back from, a point about 800 yards further to the east.

The gradients eastward from the siding points at Auchnashellach are as follows:—

Rising 1 in 400 for 50 yards; falling 1 in 60 for 1,550 yards (except for an intermediate piece of about 100 yards which is upon a falling gradient of 1 in 110), to within 200 yards of the point of collision; rising 1 in 375 for 500 yards, and rising 1 in 75 for another 500 yards to the point where the runaway train is supposed to have stopped.

Evidence.

Donald McLeod states: I have been 26 years in the service, and station-master at Auchnashellach for 17 years. On the 14th October I came on duty at 8 a.m., to remain on till 8 p.m. I was on duty when the 4.20 p.m. down train arrived at 6.45 p.m. It was due at 6.10 p.m. The engine stopped on the points of the siding. There were two waggons to put off into the siding, the two next to the engine. I crossed the line in front of the engine, and unlocked the padlock which secures the point-lever, and then went back to the end of the tender to see who was uncoupling the waggons. I found the fireman slackening the screw coupling. He tried to uncouple but found he could not do so, so he unscrewed it further. He then came out and went on to the engine, and I went in, and, finding there was some difficulty in uncoupling, I called out to set back a bit. The engine set back, and I then lifted off the coupling. I then came out and went to the points, prepared to pull them over for the waggons to go into the siding. I thought the guard would have uncoupled, as usual, the two waggons for the sidings. While I was standing at the points I saw the whole train slipping back from the engine and tender. I did nothing more, and gave no instructions, but the engine very soon started back after the runaway train. I did not see the guard at all and do not know whether he went back in the train or on the engine. I did not leave the station, and I do not know from my own knowledge how the collision occurred. The line was blocked. A train came from Strome Ferry to take the passengers. That train arrived here from Strome Ferry at 9.10 p.m. The passengers had walked to the station from the scene of the accident. It was a mixed train, and the passenger carriages, when the engine was standing, were not at the platform. If all had gone well the engine and tender would have drawn forward west of the points, and then I would have pulled them over, and the two waggons would have been tail-roped in I did not know that the brake upon the passenger

carriages was out of order. I put down the brake on the leading waggon myself. The brake on the next waggon was on the platform side, and I do not know if that was put down. I pinned the one I put on tight down. After the train had moved back I did nothing. I did not go to try to put down any of the other waggon-brakes. I did not think the train would move far. It was very dark, and a showery evening. There were nine passengers and all of them, except one, stated that they had been shaken and bruised. I saw one man with his forehead cut. There is no person at this station except myself. It is shut at night. In the summer months my hours are from 6 a.m. to 8 p.m. There are only three trains each way in summer, and two in winter.

Donald Fraser states: I have been in the service over 20 years and a guard for nearly 13½ years, working on the Skye line. On the 14th October I came on duty at 10 a.m. at Strome Ferry to work till 7 p.m. That is my regular work for one week. The alternate week my hours are from 5.30 a.m. to 3 p.m. I was guard of the 4.20 p.m. down mixed train from Dingwall. We started at 4.42 with a train consisting of engine and tender, four loaded waggons, two close goods vans, one empty waggon, one empty cattle waggon, one loaded horse-box, one saloon, one first-class, one composite, one third-class, and brake-van in which I was riding. There was a hand-brake in the brake-van working the Newall's brake, which was coupled on the two rear vehicles, both of which had four wheels. The brake was in good order when we started. We put off the saloon, which was empty, at Auchnasheen, which station we left at 6.12 p.m., 37 minutes late. We stopped at Glencarron platform to set down two passengers. My brake was on to stop at the platform. As I was releasing it, after stopping, the brake failed, the pinion-spindle breaking. I turned on my red light and showed it to the driver, and then walked down to the engine, and brought the driver back to let him see what had happened to the brake. He came and looked, and said it would be all right. The brake was off when we started. We had two waggons to put off at Auchnashellach—two waggons next to the engine, loaded with sleepers. When we got to Auchnashellach at 6.45 p.m., 35 minutes late, the engine stopped on the points, the passenger carriages being away, east of the platform. I came out of the van, and on going forward I found the driver between the composite and the third-class carriage screwing up the wheel which applies the brake to the composite carriage. It could not have been applied on any other one of the passenger carriages. The first-class carriage was not fitted with the brake, and the brake upon the third-class and the brake-van could not have been applied by the hand-wheel on these vehicles, so long as they were coupled together by the brake-coupling. I believe the driver by screwing up the wheel on the composite carriage brought the blocks well on to the wheels, but I did not look. I went forward on the left-hand side, that is the platform side of the train. The driver was not with me. I put down the brake upon the waggon next to the engine, which was the only one which had the brake handle on that side. I am certain that the brake I put down was the only one with the handle on the platform side, but I will not be quite sure whether it was on the first or the second waggon behind the tender. I then went away for the tail rope which was upon the platform opposite to the points. I caught one end of it and pulled it back ready to hook on to the front waggon. I then went to the back of the second waggon to uncouple it. It was coupled with a centre coupling and two side chains. I uncoupled the side chain on the platform side, and then felt that the whole train was moving back. I then went forward to the engine. The driver was on the line behind the tender, with the coupling in his hand. The station-master was on the opposite side at the points. I do not know whether the coupling between the tender and the leading waggon was then uncoupled or not. I said to the driver, "Do not uncouple till I get a stick." I did not hear any answer. The train began to slip away back at once. The leading or the second waggon, whichever it was that I had put the brake on to, was not up to the platform. I immediately went to the brake-handle, and pressed it down as much as I could. I held on to it for the space of about 30 yards. I then let go, as the train was gaining speed and I was doing very little good. The train disappeared, running back down the incline. I then came back to the engine and got on to the step. The driver then started his engine back after the train. I said to him, "Go gently." That is all I said. I do not remember whether the driver said anything to me. We went slowly back at a speed of a little over four miles an hour. We went back for over a mile. We then saw the white lights on my van. Directly after we saw the lights we came into collision with the waggon in front of the train. The engine was at that time moving very slowly indeed towards Auchnasheen. The train must have been coming back again towards us, although it was too dark to see what it was doing. The only vehicle which left the rails was the leading one, loaded with sleepers. There were only nine passengers; eight of them were in the third-class carriage, and the other in the second-class compartment of the composite. I went to the passenger carriages. Several of the passengers were hurt, but none seriously. I told the passengers what had happened, and I then went back to the station with the driver and told the station-master, who wired to the superintendent. I did not go forward with the passengers with the relief train, but remained at Auchnashellach until a special engine came from Dingwall and took my train back to Auchnasheen. I am sure it was the driver and not the station-master who was between the tender and the leading waggon at Auchnashellach when I came forward and said, "Do not uncouple till I get a stick." There were about eight minutes between the time that the train ran away and the time that the engine went after it. I think the accident happened at a little after 7 p.m., but I did not look at my watch. I cannot for certain say whether the driver, when I saw him behind the tender, had the waggon coupling or the tender coupling in his hand, but I am almost sure it was the tender coupling. I do not know how the waggon had been coupled. The waggon had a link coupling, and the tender had both a screw coupling and a link coupling. I did not look at the train after the accident to see how many brakes were down. When the engine came to take the train away I lifted all the brakes which were down, but I cannot say how many there were.

Alexander McDonald states: I have been 18 years in the service and a driver for eight years. I have been driving regularly on the Skye line for eight years. On the 14th October I came on duty at Strome Ferry at 9.30 a.m., to work till 7.30 p.m. That is my regular day's work. My engine (No. 74), is an eight-wheeled engine with leading bogie, and driving and trailing-wheels coupled, and a six-wheeled tender. It was fitted with the automatic vacuum-brake, working blocks on the four coupled engine wheels and on the six tender wheels. It was in good order. I left Inverness at 3.15 p.m., in front of the engine of that train, and took on the Skye portion of the train, which left Dingwall at 4.42 p.m., 22 minutes late. We had been late in arriving at Dingwall. We had 14 vehicles on when we left Dingwall, and I knew that the two rear vehicles were coupled with the Newall brake. We put off a saloon at Auchnasheen, where I was told to stop at Glencarron. After stopping there the guard came to me and told me that his brake was broken. I went back and found that the pinion spindle was broken, and that the brake was useless. I told the guard it would be all right, went away to my engine, and started. I stopped at Auchnashellach, where we had to put off

two waggons, just on the points of the siding, as usual in such cases. My fireman did not leave the foot-plate at all that I know of, but I went back and put on the Newall brake on the carriage next but one in front of the van by means of the small hand-brake wheel which is at the back of the carriage. I am sure that I screwed the brake tight on. I feel sure that the blocks were tight on to the wheels, although I did not look to see. The guard came to me. I did not try to put the brake on to the two rear vehicles, but I thought that the guard had done so. I did not ask him. I then walked up the left-hand-side, that is the platform side of the train, with the guard, and on my way pinned down three waggon-brakes on that side. I went under the train to the other side, then about three waggons behind the engine, and pinned down the brake on the third waggon behind the engine. I am sure that when I pinned these brakes down the blocks were tight on the wheels. One of the brakes I pinned down was that upon the horse-box, and another was upon a close van. I then went to the rear of the tender with the guard. The station-master was between the tender and the front waggon. He said nothing to me, but I told the fireman to ease back the engine, and the station-master then uncoupled. Neither I, nor the fireman, nor the guard were between the tender and the front waggon at any time after the train arrived at Auchnashellach, unless the fireman went there while I was away at the rear of the train. When I told the fireman to ease back I was on the platform side standing with the guard, as, after pinning down the brake on the third waggon, I had come across again to the platform side. The guard got the tail rope, and then went back to uncouple behind the second waggon. While he was there the agent uncoupled between the tender and the front waggon and then went away to the points. I was standing on the side of the train, just behind the tender, when I saw the train commence to go back I went in to try to get the coupling on again, but could not do so, I then called to my mate to come back. He moved back about half an engine length, and then I stopped him. The guard came up as I was trying to couple on again, and he told me to come out, as it was no use, and it was better to come out. He did not go and get on to one of the brake handles, but just stood looking at the train going away. He certainly did not go away with the train for 30 yards as he says he did. I arranged with the guard to go slowly back after the train, and I did so at a speed not exceeding four or five miles an hour, starting seven or eight minutes after the train had gone. We went back for a mile or more and then saw the lights of the train. I thought it was standing and slowed down by using the tender-brake, and I had come nearly, if not quite, to a stand when we met the train, which was coming back towards us. The blow did not drive my engine forward at all, and I do not think the train can have been coming at any speed. I had no steam on. My brake was not on. I did not see the guard put down any brakes.

Allan Tosh states: I have been six years in the service and fireman for a year. On the 14th October I was fireman to driver McDonald. After arrival at Auchnashellach, the only time I was off the foot-plate was when my driver was away putting down brakes, and I went and loosened the screw coupling behind the tender, as described by the station-master. The driver and the guard came up from the rear of the train together on the platform side. I did not know how many brakes were put down. After the train started away the driver called me back, but stopped me after I had come back for about half an engine length. We had nearly come to a stand when the collision took place.

Conclusion.

This collision, which was of an unusual character, occurred under the following circumstances:—

Upon the 4.20 train, which, after leaving Auchnasheen, consisted of engine and tender, nine goods vehicles in front, and four passenger vehicles in rear, there were in working order an automatic vacuum-brake upon the engine and tender, and a Newall brake coupled up on the rear brake-van and the third-class carriage in front of it, which brake was worked by a wheel in the rear van. The train stopped at Glencarron platform, and when the guard released the Newall brake the wheel fell off, owing to the fracture of the spindle, and the brake was rendered useless. The driver was made acquainted with the fact, and the train proceeded to Auchnashellach, where the two leading waggons had to be uncoupled and tail-roped into a siding, but before this operation was commenced the driver went back to the rear of the train, and by means of a small outside brake-wheel screwed on the Newall brake upon the composite carriage, the third vehicle from the rear, which had not been connected with the brake upon the two vehicles behind it. He states that he then came forward from the rear of the train in company with the guard, and on his way pinned down the brake-levers on four of the goods vehicles, three upon the left side and one upon the right side of the train; but the guard denies that he was with the driver at this time, and says that he himself put down the only brake-lever which was upon the left side of the train. In the meantime the station-master had, he states, pinned down the brake-lever on the leading waggon, and on the return of the driver from the rear of the train the station-master uncoupled the coupling behind the tender, the guard, after getting the tail-rope, going to uncouple behind the two front waggons. While so engaged, and before he had done more than uncouple one side chain, the guard felt the train moving back, so he came forward again to the engine, and says that he found the driver between the tender and the front waggon, with the coupling in his hand, and told him not to uncouple until he had got a stick. By that time, however, the train had been already uncoupled, and the driver was trying to couple it on again, but without avail, and the train moved off at once. The guard states that he went with it for a distance of 30 yards, hanging on to a brake-lever, but the driver declares that the guard never moved, and stood looking

after the train. After some minutes had passed it was arranged to take the engine slowly after the train to pick it up, but unfortunately so long a time had elapsed that the runaway train had run for nearly a mile and a half, and having come to a stand upon a rising gradient, had turned back again, meeting the engine before the driver, who saw the lights of the train, and thought it was at rest, had quite stopped his engine.

Such being the history of the case, I regret to say that I cannot believe a good deal of the evidence which was given. If all the witnesses are speaking the truth, the brakes upon all the wheels of one passenger carriage and those upon two of the wheels under each of six of the goods vehicles were tightly applied; but it is absurd to suppose that if such were the case the train, standing as it was with two, at least, of the waggons upon the rising gradient of 1 in 400, could have moved off as fast as it evidently did. Indeed, I very much doubt whether, with that number of wheels properly braked, it would have moved at all, and if it did move it would have started so very slowly that it would have been possible to set back the engine on to it to couple on again, or to arrest the progress of the train by putting down all the other waggon brakes, long before it had gained any speed.

The driver and the guard contradict each other on very material points, and I cannot avoid the conclusion that each is trying to make out the best possible story for himself.

I do not think that the driver showed any carelessness in the manner in which he went after the train, and it was so dark that it must have been almost impossible for him to see whether the lights on the train were stationary, or were coming back towards him; but I think that it would have been better if the guard had walked back with his light in front of the engine, as was suggested by the driver, instead of riding on the step.

I attribute the accident to want of thought on the part of the guard and driver of the train, for upon arrival at Auchnashellach they should have informed the station-master that the brake upon the rear van was out of order, so that he might not uncouple the train until its safety was assured by the application of all the brake power remaining available, and it was their duty, and the duty of the guard more especially, to see that this brake power was properly applied. The guard had at the time been on duty for 9 hours, and the driver for 7½ hours.

It is satisfactory to know that, very shortly, when the order issued by the Board of Trade under the Regulation of Railways Act of 1889, regarding the use of continuous-brakes, comes fully into operation upon this railway, it will be obligatory to have an automatic continuous-brake in operation upon all the passenger vehicles of a mixed train, so that a recurrence of an accident of this description, which upon many parts of the system might be very serious, will be well-nigh impossible.

I have, &c.,

F. A. Marindin,

Major, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

CORRESPONDENCE.

Highland Railway Company,
General Manager and Secretary's Office,
Inverness, 8th December, 1892.

Sir,

Auchnashellach Accident.

The directors of this Company, at their meeting yesterday, had under consideration Major Marindin's report dated the 12th ultimo, on the above accident, when I was instructed to point out that if the train, on the occasion referred to, had been marshalled in the manner set forth in the Order served on the Company, dated the 16th February 1891, and the carriages placed next the engine, there is little doubt that the passengers would have sustained very serious injury, and probably a loss of life would have occurred.

I am, Sir,
Your obedient servant,
(Signed) And. Dougall.

The Assistant Secretary,
(Railway Department,)
Board of Trade, London.

Board of Trade,
(Railway Department), London,
15th December, 1892.

Sir,

With reference to your letter of the 8th instant, as to the report of Major Marindin, R.E., C.M.G., on the accident at Auchnashellach, and the effect which the application of the Board's Order of February 1891, relative to mixed trains would have had on the train in question, I am directed by the Board of Trade to enclose for the information of the directors a copy of a memorandum by Major Marindin on the subject.

I am, Sir,
Your obedient Servant,
(Signed) Courtenay Boyle.

The General Manager,
Highland Railway.

[Copy.]

Memorandum by Major Marindin.

On the contrary, if the carriages had been next to the engine they would not have run away at all,

because it would have been impossible to place the two waggons on the siding at Auchnashellach unless the carriages had remained coupled on to the engine.

This is entirely irrespective of the question of brakes; but, speaking generally, the running away of a mixed train in which the passenger carriages are fitted with an automatic continuous-brake is most improbable.

(Signed) F. A. M.

12.12.92.

The Highland Railway,
General Manager's and Secretary's Office,
Inverness, 17th December, 1892.

SIR,

I AM requested by the directors of this Company to acknowledge the receipt of your letter dated the 15th instant, enclosing copy of a memorandum by Major Marindin, R.E., regarding the accident at Auchnashellach.

It is clear that under the Order of February 1891 the passenger carriages would have been next the engine, and remain in that position while the shunting at Auchnashellach was being performed. That being so, it is obvious that when the engine backed in search of the train which had run down the incline the passenger carriages would first have come in contact with the train and been, doubtless, smashed like the waggon of sleepers which Major Marindin describes in his report, and as the passenger carriages are less strong than a dumb-buffered waggon the damage to them would have been greater than actually took place to the waggon.

I am, &c.,
(Signed) AND. DOUGALL.

The Assistant Secretary,
(Railway Department,)
Board of Trade, London.

Board of Trade,
(Railway Department), London,
23rd December, 1892.

SIR,

I AM directed by the Board of Trade to acknowledge the receipt of your letter of the 17th instant, in which you further refer to the report of Major Marindin, R.E., C.M.G., on the accident at Auchnashellach, and to the question raised as to the effect which the application of the Board's Order of February 1891, relative to mixed trains, would have had as regards the make-up of the train concerned.

In reply I am to acquaint you, for the information of the directors, that the Board of Trade cannot suppose that such an extraordinary procedure as that of sending back an engine with passenger carriages attached in search of the runaway goods waggons could have been adopted; and to add that they find nothing in the correspondence to make it necessary for them to consider any modification of the Order made under the Regulation of Railways Act of 1889.

Yours, &c.,
(Signed) COURTENAY BOYLE.

The General Manager,
Highland Railway.

The Highland Railway Company,
General Manager's and Secretary's Office,
Inverness, 31st December, 1892.

SIR,

I AM requested by the directors of the Highland Railway Company to acknowledge receipt of your letter of the 23rd instant, regarding the accident at Auchnashellach, and to make the following observations in reply thereto:—

The siding at Auchnashellach holds six waggons within the Scotch block, and when the train arrived three waggons were already in it. The passenger portion of the train consisted of one first-class, one third-class, one large tri-composite, and one brake-van, and, according to the Order issued by the Board of Trade under the Regulation of Railways Act, 1889, these vehicles would have been next the engine, but the siding could not have held them, and therefore they would have remained attached while the engine went in search of the runaway goods waggons. It is clear, therefore, that the result would have been disastrous as I have already stated, and the probability is that there would have been a serious loss of life, whereas, as it was, owing to the carriages being at the tail of the train, the passengers escaped with very slight injuries.

You state "you find nothing in the correspondence "to make it necessary to consider any modification of "the order made under the Regulation of Railways "Act, 1889." The directors of this Company continue to entertain a strong opinion that the order you refer to is inexpedient and will be attended with danger to the public. They hope, therefore, it will be modified. This opinion is based on experience gained in the practical working of mixed trains for nearly 40 years, during which time no passenger has lost his life or even been seriously injured when travelling in mixed trains, whereas, if the passenger carriages had been placed next the engine as directed by the new order, loss of life and serious injuries would undoubtedly have occurred in several cases.

I am instructed to say that if the order is enforced as it stands, it will practically put an end to the running of mixed trains on the Highland line, and the accommodation now afforded to the public in the Highlands will be seriously curtailed. The Highland line serves eight counties containing a population of 468,976, and you can judge of the effect which the new state of things will entail on that large population, but of course the Board of Trade must take the responsibility.

I remain, &c.,
(Signed) AND. DOUGALL.

The Assistant Secretary,
(Railway Department),
Board of Trade, London.

Board of Trade,
(Railway Department), London,
17th January 1893.

SIR,

WITH reference to your letter of the 31st ultimo, and previous correspondence relative to the accident that occurred on the 14th October at Achnashellach and the marshalling of mixed trains, I am directed by the Board of Trade to transmit herewith, to be laid before the directors, a copy of a memorandum by the Railway Inspecting Officers of this Department on the subject.

I am, &c.,
(Signed) COURTENAY BOYLE.

The General Manager,
Highland Railway.

[Copy.]

MEMORANDUM by the RAILWAY INSPECTING OFFICERS.

Dealing first with the case of the accident at Auchnashellach, we would observe that it appears from the evidence of the guard of the train that all the passengers were in the third-class carriage, except one who was in the composite carriage, and that it would have been possible to have placed the loaded third-class carriage at any rate upon the siding. Moreover, there would have been no difficulty whatever in unloading the passenger carriages at the station, and, giving the servants of the Company credit for ordinary intelligence, this is what would probably have been done, for we cannot believe that, if the passenger carriages, still loaded, had remained attached to the engine, the driver and guard of this train, with the sanction of the station-master, would have pushed it back down the incline in the dark to search for the runaway goods waggons.

The general question as to the marshalling of the vehicles in mixed trains was fully considered before the Board of Trade issued the orders under the

Regulation of Railways Act, 1889, and, as it was decided that passenger carriages in such trains must be fitted with an automatic continuous-brake, in working order, it would be impossible to place these carriages in any position except in front of the goods waggons, unless these waggons were all fitted with through pipes.

Apart from this, the Board of Trade has always held the opinion that it is safer for the passenger vehicles to be placed in front of the goods vehicles, because in such a position the passengers are not exposed to danger if an accident arises from a goods vehicle breaking down or leaving the rails, as they are more liable to do than are passenger vehicles.

It is quite true that, as is urged by the General Manager of the Highland Railway Company, there may be, and have been, collisions and cases of derailment of an engine, where the fact of the goods vehicles being in front of the passenger carriages has probably safeguarded the latter, although we think that the general manager puts it too strongly when he says that in "several" such cases there would "undoubtedly" have been "loss of life," but in the vast majority of cases of accident to mixed trains, which are mostly due to the breakdown of a goods vehicle, there would have been no accident at all, so far as the passenger vehicles are concerned, if these vehicles had been in front of the goods vehicles.

It is also true that upon the Highland Railway, there has been a remarkable absence of deaths or serious injuries due to these accidents, but that the passengers have very narrowly escaped from death or serious injury in some cases is clear from the record of the circumstances attending the two following accidents, viz. :—

1. That at Mound on the 26th November, 1885, where, owing to the break-down of a goods waggon near the engine, the greater part of the train ran into the sea, a post-office sorting-van, a break-van, and a third-class passenger-carriage, containing seven passengers, being upset in the water at a place where, providentially, there was at the time a depth of only six feet of water.

2. That at Dunachton, near Kincraig, on the 2nd August 1888, where, owing to the 12th goods vehicle in the train leaving the rails, the road was broken up, so that all the passenger vehicles were thrown off, two were upset, one, a Highland composite carriage containing 10 passengers, being found with the frame on its side half-way down the slope of an embankment 20 feet high, and the body at the foot of the embankment, with its roof uppermost, but having turned completely over when rolling down the bank. In this case six passengers were injured, and it is marvellous that none were killed.

(Signed) F. A. Marindin, 10.1.93.
C. S. Hutchinson, 11.1.93.

The Highland Railway,
General Manager's and Secretary's Office,
Sir, Inverness, 20th January 1893.

I have to acknowledge receipt of your letter dated 17th instant, transmitting copy of a memorandum by the inspecting officers of the department relative to the accident that occurred at Achnashellach on the 14th October last, which has been under the consideration of the directors of this Company.

The engine driver and guard had no reason to suppose that the runaway portion of the train would be coming towards them when they started in pursuit of it, and therefore they were justified, in the opinion of the directors, in backing slowly towards it; and if the carriages had been next the engine, as the new order provides, the consequences to the passengers, as I have already pointed out, would have been serious indeed.

The inspecting officers give two instances in which passengers narrowly escaped in consequence of the present mode of marshalling mixed trains, but I take the liberty of quoting the following six cases wher passengers would have suffered most seriously if th carriages had been next the engine, viz. :—

1. On 8th January, 1875, the 7.35 p.m. mixed train from Inverness to Perth came into collision with a goods train at Boat of Garten owing to the points of the loop line being open. The two engines on the 7.35 train were much damaged, and six waggons immediately behind the engines were smashed, but the passenger carriages escaped, and no person was injured.

2. On 29th December 1877, part of the 12.10 a.m. mixed train from Wick to Inverness ran off the rails at Kildonan, the points having been wrong. The engine and six waggons next to the engine went off the line and did much damage to the permanent way; but the passenger carriages and passengers were saved from injury.

3. On 24th February 1879, part of the 10.18 a.m. mail train from Inverness, consisting of two engines, nine waggons of fresh fish next the engines, and seven passenger carriages, ran off the line about two miles north of Dalwhinnie. The engines went over the embankment, the tender of one of them falling into the River Truim. Several of the fish waggons also left the rails and went down the embankment at the side of the river, but the carriages and passengers, owing to the fish trucks having been in front, escaped injury.

4. On 16th October 1880, the 12.40 a.m. mixed train from Perth to Inverness came into collision with a goods train at Ballinluig through the mixed train overshooting the loop. The two engines on the mixed train, and nine waggons immediately behind them, were thrown off the rails and much damaged, but the carriages and passengers were uninjured.

5. On 3rd November 1882, the 7.50 a.m. mixed train from Stromeferry to Dingwall ran off the rails near Strathpeffer owing to one of the engine springs breaking. Four waggons were smashed, and about 70 yards of the line torn up, but the carriages and passengers received no damage.

6. On 6th July 1885, part of the 6.10 a.m. mixed train Perth to Pitlochry left the rails at Pitlochry in consequence of a pointsman's mistake. A guard's van and seven waggons went off the line, and the permanent way was much damaged, but the carriages and passengers were entirely uninjured.

I may also remind you that a jury trial, presided over by Lord Shand, took place in the High Court at Edinburgh in July 1886, at which the question of marshalling mixed trains was most thoroughly gone into and considered. A passenger named Watson, who was injured in the Mound accident referred to in the memorandum by the inspecting officers, made a claim against the Company for 5,000*l*. Major Marindin appeared as a witness for the plaintiff, and gave strong evidence against the present plan of marshalling mixed trains, and many other witnesses were examined on both sides. The result was that the jury gave a verdict in favour of the Company, and Watson got nothing. On this occasion, therefore, the opinions of Major Marindin, on the subject of mixed trains, were disregarded, and the present mode of marshalling was approved after hearing evidence at great length on both sides. The trial lasted two days.

I remain, &c.,
(Signed) And. Dougall.

The Assistant Secretary,
(Railway Department),
Board of Trade, London.

The Highland Railway Company,
General Manager and Secretary's Office,
Sir, Inverness, 24th January 1893.

I am requested by the directors of the Highland Railway Company to send you the enclosed correspondence which has recently passed between the Railway Department of the Board of Trade and the Company, and to ask your special attention to

the question dealt with in it, viz., the proposed reversal of the system of marshalling mixed trains which has been in operation on the Highland Railway system for nearly 40 years.

Our experience is, that the safer method of marshalling a mixed train, is to place the goods waggons between the engine and the carriages. We have found that, in the great majority of cases, accidents happen to the front of the train by derailing of the engine, failure of points, collisions, &c., when the waggons receive the brunt of the shock and save the passenger carriages which are behind. Of late years the Board of Trade inspecting officers have adopted a theory that the passengers are, or ought to be, safer at the front of the train; but this is simply a theory, and is contradicted by the experience of all the leading railway companies in the kingdom.

I need hardly point out that the proposed change would be extremely burdensome to the Highland Company, and would deprive the public to a very great extent of the benefits of railway communication in the Highlands. The traffic on the Highland Railway system is of a special character, and is entirely different from the traffic of nearly all other railways. The district is sparsely populated, and has little trade and no minerals. Mixed trains are a necessity. Over our system we run about 113 mixed trains daily, which is almost half of the train service. These trains could not be duplicated with the plant reasonably required for working the line, or except at a cost which would mean financial ruin to the Company, and depriving it of the capacity of giving any kind of tolerable service to the public. In short, the order of the Board of Trade means paralysis of the undertaking.

It is obvious that mixed trains in practice cannot be run with the passenger carriages next the engine, because in shunting operations, the passengers would have to be jolted backwards and forwards with every shunt. In Watson's case mentioned in the correspondence, Major Marindin admitted this. His remedy was to provide a special siding, which he called a "pocket," at each station, into which the carriages should be placed during shunting operations, but as was established in the case referred to, the Company have not got such sidings, and have no power to provide them, nor to take land for the purpose.

The proposal would involve a re-arrangement of our stations at an enormous cost and under parliamentary authority. Indeed, at some stations it is practically impossible to provide the necessary sidings, and so far as we have considered the method of working a train upon Major Marindin's suggestion, it seems wholly impracticable.

I need scarcely point out that in any view it is impossible to carry out the necessary changes upon our railway system and methods of working by the 16th of August next, when the order of 16th February 1891 comes into operation. The directors therefore venture to request that you will cancel the order, so far as it relates to the marshalling of mixed trains, or at all events to suspend it indefinitely.

I am, Sir,
Your obedient servant,
(Signed) AND. DOUGALL,
General Manager.

The Right Hon.
A. J. Mundella, M.P.,
President of the Board of Trade,
Whitehall, London.

Board of Trade,
(Railway Department), London, S.W.,
13th March 1893.

SIR,

WITH reference to your letters of the 20th and 24th January last, as to the accident at Auchnashellach and the marshalling of mixed trains, I am directed by the Board of Trade to forward a copy of a final memorandum by the Inspecting Officers of the Railway Department on the subject, and to state that the Board cannot assent to make any modification in the terms of the Order issued to the Highland Railway Company under the provisions of the Regulation of Railways Act, 1889.

I am further to state that it is the intention of the Board of Trade to at once present the correspondence on this subject to Parliament, and in these circumstances they are of opinion that no useful purpose can be served by any continuance thereof.

I am, &c.,
(Signed) COURTENAY BOYLE.

The General Manager,
Highland Railway.

MEMORANDUM by the RAILWAY INSPECTING OFFICERS.

I. In reference to the letter of the General Manager of the Highland Railway Company to the Assistant Secretary, Railway Department, Board of Trade, dated January 20th, 1893, we have little to add to our memorandum of the 11th January.

We would, however, remark that, in considering the question of the comparative risk to passengers arising from different positions of carriages in mixed trains, the accidents to such trains should be divided into two classes, viz.:—

(*a.*) Accidents and collisions such as all passenger trains are subject to;

(*b.*) Accidents to which mixed trains only are liable.

In cases under the first head it sometimes happens, as we have already stated, that the damage to the passenger carriages is less when the first shock is taken up by goods vehicles running in front of the passenger vehicles, than it might reasonably be expected to be if the passenger vehicles were next to the engine, but, if this fact is to be accepted as a sufficient reason for running the goods vehicles in this position, the argument would equally apply to the making up of all passenger trains upon all lines of railway.

Accidents under the second head are those which are caused by the break-down of one of the goods vehicles, and these accidents are almost always of such a nature that the passengers are exposed to a risk, from which they would be free if the passenger carriages were in front of the goods vehicles.

The six accidents quoted by the General Manager all belong to the first category, and, while it is probably true that in these cases the passengers were safe-guarded by the goods vehicles being in front, we must remark that according to the official reports, no waggons "went down the embankment" at the accident near Dalwhinnie, although four waggons were upset; that only four waggons and not nine, were damaged at Ballinluig; that three of the six accidents, viz., those at Boat-of-Garten, Ballinluig, and Pitlochry, could hardly have occurred in the way they did, under the provisions of the Regulation of Railways Act, 1889, in regard to interlocking, that one of them, that at Kildonan, was not even reported to the Board of Trade, in compliance with the Regulation of Railways Act, 1877 (34 & 35 Vict. cap. 78, section 6), and was therefore probably of a trivial character, and, moreover, was probably due to the absence of interlocking; and that the one at Pitlochry was not considered to be of sufficient gravity to require any official enquiry.

As to the "Mound" case, tried in the High Court at Edinburgh, we are not aware of the precise terms of the verdict, but it does not follow, that, because the Company were held not to be liable for damages in this case, the jury therefore approved of the rules in force for marshalling mixed trains, for the same conclusion might have been arrived at if the jury were of opinion that, in so marshalling the train in question, the Highland Railway Company were not culpably negligent, there being no doubt that the accident was due to the break-down of a goods vehicle.

II. The letter to the President of the Board of Trade, dated 24th January 1893, re-opens the whole

question of the conditions under which mixed trains may be run, which were thoroughly investigated by the President before the orders under the Regulation of Railways Act, 1889, were issued, and we would, in the first place, point out that, leaving for the moment out of consideration the relative advantages, from the point of view of safety, due to the several modes of marshalling these trains, it would be impossible to marshal them in any other way than that required by the orders, unless the provision of the Act of Parliament relating to the use of automatic continuous brakes upon passenger trains is to be an absolute dead letter in regard to mixed trains.

As it is generally admitted that to some extent there is greater risk to passengers in mixed trains than in ordinary passenger trains, the anomaly would present itself that the very trains in which there is the greater risk are those which are allowed to run with the fewer safety appliances, whereas, under the terms of the order, not only must there be an automatic continuous brake upon all the passenger vehicles, but there must be increased brake power for the goods vehicles, with reduced speed, and shorter trains, which will prevent the running of mixed trains of inordinate length, such as are now sometimes seen. We notice that it is stated that almost one half of the trains now running upon the Highland Railway are mixed trains, and although the time has not yet arrived for a decision as to the number of such trains which may be sanctioned, we may observe that such a proportion as this has not to our knowledge been sanctioned upon other important railways up to the present time.

The General Manager remarks that "it is obvious "that mixed trains in practice cannot be run with the "passenger carriages next to the engine," and in answer to this we would simply say that the orders under the Regulation of Railways Act, 1889, are already in force upon a large proportion of the railways in the United Kingdom; that most of these railways are running mixed trains in this "impossible" manner, and that it is a fact that even before the passing of the Act of 1889, mixed trains were marshalled in the manner required by the orders upon more than one line of railway.

We would further observe that the Board of Trade, after careful consideration, issued a circular dated 25th August 1886, calling the attention of railway companies to the importance of placing the passenger carriages in mixed trains, in front of the goods vehicles, and that the grounds for the decision then arrived at have been much strengthened by the passing of the Act of 1889, making compulsory the adoption of continuous automatic brakes on trains conveying passengers, which obligation cannot be carried out in mixed trains unless the passenger vehicles are placed next to the engine.

The final paragraph of the General Manager's letter involves a question which will require very careful consideration when the 18th August 1893 arrives, but we are at a loss to see why the time allowed to this Company for complying with the terms of the orders is not sufficient, seeing that it amounts to 2½ years from the date of issue and four years from the date of the Act, and that it is as much as has been granted to any Company of any importance, and considerably more than that granted to most.

We have, &c.

C. S. HUTCHINSON,
F. A. MARINDIN,
H. A. YORKE.

11th Feb. 1893.

The Assistant Secretary,
Railway Department, Board of Trade.

GENERAL REPORT

TO THE

BOARD OF TRADE

IN REGARD TO THE

SHARE AND LOAN CAPITAL, TRAFFIC IN PASSENGERS AND GOODS

AND THE

WORKING EXPENDITURE AND NET PROFITS FROM RAILWAY WORKING

OF THE

RAILWAY COMPANIES

OF THE

UNITED KINGDOM,

For the Year 1892.

Presented to both Houses of Parliament by Command of Her Majesty.

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CONTENTS.

Page

REPORT to the Secretary of the Board of Trade:—

Capital - - - - - - - - - - 3
Traffic and Receipts - - - - - - - - - 5
Working Expenditure - - - - - - - - - 9
Net Earnings and Dividends - - - - - - - - 13
Summary - - - - - - - - - - 15

APPENDIX.—Tables:—

No. 1. Length of railways open for traffic - - - - - 17
2. Amount of ordinary, guaranteed and preferential, and loan capital, and proportion per cent. of each to the total capital - - - - - 17
3. Amount and average rate of dividend on each description of capital - - 17
4. Statement showing the various Rates of Interest or Dividend paid on Capital in 1891, and the Amounts on which each rate was paid - - - 18
5. Statement of the amounts by which the capitals of the railway companies have been nominally increased on the conversion, consolidation, and division of their stocks - - - - - - - - - - 19
6. Total railway receipts and expenditure, and net receipts from railway working, and per-centage proportion of expenses to receipts, and of net receipts to total share and loan capital - - - - - - 20
7. Amount of receipts from passenger and goods traffic, with the amount and rate per cent. of increase of each year over the previous year - - - 21
8. Comparison of number of passengers, number of season ticket holders, and tonnage of goods and minerals conveyed - - - - 22
9. Comparison of number of miles travelled by passenger, goods, and mixed trains - 23
10 Comparison of receipts:—
I. From each class of passenger traffic - - - - - 24
II. From each class of goods traffic and proportion of receipts from passenger and goods traffic - - - - - - - - 25
11. Comparison of Railway Working Expenditure, specifying the amounts under each head of outlay - - - - - - - - 26
12. Comparison of receipts from each class of passenger and goods traffic per mile of open railway - - - - - - - - 28
13. Comparison of total receipts from passenger traffic and from goods traffic per train mile and per mile of open railway - - - - - - 29
14. Comparison of each item of expenditure per train mile and per mile of open railway:—
I. Working expenditure per train mile - - - - - 30
II. Working expenditure per mile of open railway - - - - 31
15. Comparison of receipts per train mile, and proportion per cent. of expenditure to receipts, of the principal railway companies - - - - 32
16. Comparison of expenditure per train mile of the principal railway companies - 34
17. Comparison of the total number of locomotives, carriages, and other vehicles owned or hired by the railway companies, and of the number thereof per mile of open railway - - - - - - - - 38
18. Expenditure by certain railway companies in 1889, 1890, 1891, and 1892 on wages in their principal departments, together with the cost of coal and coke, and materials used in repairing and renewing locomotives, &c. - - - 40

To the Secretary of the Board of Trade.

Sir,

We submit to you the annual report with regard to the capital, traffic, and working expenditure of the railway companies of the United Kingdom for the year 1892. In doing so we have to remark at the outset that the final results shown by the railway returns for last year are very similar to those shown by the returns for the previous year, thus largely justifying the observation made at the close of the report for 1891, to the effect that, when that report was written, the outlook did not afford grounds for expecting at the close of 1892 results greatly differing from those brought out by the returns for 1891. From the point of view of the railway shareholder, indeed, the general results for 1892 can scarcely be considered satisfactory. It is true that there was an increase in the revenue earned, but that increase was small in amount, and it was also overbalanced by the increase which occurred in the working expenditure of the year. The net earnings were accordingly again reduced, and there having been a considerable addition last year to the total capital paid up, the per-centage of the net earnings on capital again declined, and that, too, to a lower level than in any former year for which we have complete results.

Following the usual practice we proceed to refer to the figures under the different heads in some detail.

Capital.

At the close of 1892 the total amount of capital which the railway companies were authorised to raise for the purpose of their undertakings amounted to nearly 1,053 million pounds, and of this sum 944 million pounds was returned as paid-up, an amount exceeding the National Debt by 270 millions. The increase in the paid-up capital at the end of 1892 over the amount at the end of 1891 was about 25 millions, this following increases of 22 millions in 1891 and of nearly 21 millions in 1890. Thus, for three years in succession the increase of capital has been over 20 million pounds, but it must be pointed out that in each year the increase was largely swollen by merely nominal additions to capital, resulting from the conversion or consolidation of stocks. The nominal additions from this cause last year, however, were not so large in amount as in either of the two preceding years, the amounts of these additions being respectively 6,000,000*l.* in 1890, more than 7,000,000*l.* in 1891, and about 4,000,000*l.* in 1892. Altogether, these nominal additions for the last three years have amounted to nearly 18,000,000*l.*, or about one year's total increase in paid-up capital on the average of the past 12 years, as will be seen from the following table, which we continue from last year's report :—

Year.	Amount of Capital.	Increase.
	£	£
1881	745,528,000	17,211,000
1882	767,900,000	22,372,000
1883	784,921,000	17,021,000
1884	801,464,000	16,543,000
1885	815,858,000	14,394,000
1886	828,344,000	12,486,000
1887	845,972,000	17,628,000
1888	864,696,000	18,724,000
1889	876,595,000	11,899,000
1890	897,472,000	20,877,000
1891	919,425,000	21,953,000
1892	944,357,000	24,932,000
Total increase in the 12 years -		216,040,000
Average annual increase - -		18,003,333

The real increase of capital in 1892 was accordingly considerably larger than in the previous year, the actual amounts of the increases of capital, excluding merely nominal additions, being about 14,800,000*l.* in 1891 and 20,900,000*l.* in 1892. In spite, then, of the fact that dividends had on the whole been falling since 1889, the investing public still appear to exhibit a fair amount of confidence in the prospective remunerativeness of railway undertakings. Of the nominal additions in 1892, amounting, as above stated, to 4,000,000*l.*, no less a sum than 3,260,000*l.* is accounted for by the conversion operations of the North British Company.

We give below a summary of the table in the Appendix showing the amounts of the several descriptions of the capital of the companies at the end of 1892, and how much

of each description was returned as nominal additions due to consolidation and conversion operations.

	Ordinary Stock.	Guaranteed and Preferential Stock.	Loans and Debenture Stock.	Total.
	Million £	Million £	Million £	Million £
"Paid-up" capital - - -	347·7	345·5	251·1	944·3
Amount included in above, representing nominal additions on the consolidation, conversion, and division of stocks	25·4	27·7	15·0	68·1

In quoting these figures we may refer to the observations contained in previous reports respecting the reasons which induced the Board of Trade to obtain information from the companies on the subject of the effect of these conversion and consolidation operations upon their statements of paid-up capital, but it is not necessary to repeat those observations here.

Comparing the figures of paid-up capital as they stand with those for 1891, we find that ordinary capital shows an increase of 7,400,000*l.*, guaranteed and preference an increase of 6,300,000*l.*, and loans and debenture stock of 11,200,000*l.*; but while the two former descriptions have not been appreciably affected by merely nominal additions, the increase in loans and debenture stocks during the year would be about 8,000,000*l.* instead of 11,200,000*l.* if these were excluded. This larger rate of increase in loans and debenture stocks than in the other descriptions of capital has caused a slight variation in the proportion which each bears to the total paid up, these now being for ordinary 37 per cent., for guaranteed and preference 36 per cent., and for loans and debenture stocks 27 per cent.

A reference may here be made to the table No. 3 in the Appendix which shows for each of the last ten years the gross amounts and average rates of dividend or interest paid on each class of capital. As usual the figures given in this Table have been computed from the rates actually paid by the different companies and the amounts of capital upon which each rate was paid, but, as has been remarked in previous reports, the figures so arrived at are somewhat in excess of the true amounts owing to the fact that some companies have invested portions of their capital in the stocks and shares of other companies. The difference between these computed amounts of dividend and interest and the actual net earnings of the year is in fact nearly 1,200,000*l.*, a somewhat wide margin; but the figures given are none the less valuable for comparative purposes seeing that the computations are made on the same basis for each year and any qualification on account of excess over net earnings would apply almost equally throughout. A glance at this table will show that the computed average rate of dividend or interest on all classes of capital taken together fell last year from 4·10 to 3·98 per cent., a falling off of ·12 per cent., and that this reduction was in continuation of a movement which has been going on since 1889. The whole reduction in this average rate since 1889 amounts to ·34 per cent., so that it would have been necessary for the net earnings to have been something like 3¼ million pounds more than they were last year in order to have enabled the companies to keep the computed average rate paid at the 1889 figure. The rate of 3·98 per cent. for last year, we may notice, is not only less than in 1889 and subsequent years, but is also less than that for any other year included in the table; and going back over the particulars comprised in similar tables in former reports, we observe that it is lower than in any year for which similar computations are available, that is, as far back as 1873. As was the case in 1891, also, comparing that year with its immediate predecessor, there was a reduction last year in the average rate for each of the three great groups of ordinary, guaranteed and preference, and loans and debenture stock, the description of capital affected most adversely being of course the "ordinary." The computed rate for the ordinary capital last year was 3·98 per cent., exactly the same as the rate for all descriptions taken together, and, with the single exception of 1886, when it stood at 3·94 per cent. only, this rate is lower than that of any year since 1873. But an idea of the adverse effect of the non-expansion of the net earnings of the companies last year, as affecting the ordinary shareholder, will be gained from the fact that whereas in 1889 when the average rate for the ordinary capital stood at 4·66 per cent., the amount computed as paid in dividends on that class was 15,210,000*l.* the corresponding amount for 1892 was only 13,840,000*l.*, and that this reduced sum had to be distributed over a capital increased by about 21½ millions in the period.

Traffic and Receipts therefrom.

In comparing the revenue earned last year with that earned in 1891, we notice a virtually stationary state of affairs. The total receipts from all sources were maintained, and that is nearly all that can be claimed, the slight increase which really occurred being less on the whole than 300,000*l.* Still, there was this small increase, and had it not been for the effect of the strike of the Durham coal miners which was in progress in the early part of the year, and which injuriously affected the receipts of the North Eastern Company to a considerable extent (as mentioned in the report for last year), the following table comparing the amounts received in 1892 and 1891 from each of the principal sources might have presented somewhat more satisfactory results:

Receipts from—	1892.	1891.	Increase.	
			Amount.	Per cent.
	Million £	Million £	Million £	
Passenger traffic - -	35·7	35·1	0·6	1·5
Goods traffic - - -	42·9	43·2	†0·3	†0·8
Miscellaneous* - -	3·5	3·5	—	—
Total - -	82·1	81·8	0·3	0·3

* The Miscellaneous receipts include rents, tolls, revenue from steam-boats and other items. † Decrease.

To a certain extent this table, in spite of the falling off which it shows in the revenue earned from goods traffic, may be taken as presenting some satisfactory features to the railway shareholder. In spite of an undoubted depression in trade generally, and notwithstanding the drawback above referred to in connection with the Durham coal strike and its effects, there is yet an increase to chronicle, although not a large one. It is no small matter for the companies that their gross revenue has been maintained at a figure which was already the highest ever reached, and attention may be directed to the fact that even yet there has been no break in the record of increase under this head which began seven years ago. No actual reduction in gross revenue earned has occurred since 1885, when there was a falling off of about 900,000*l.* as compared with 1884, 1884 having itself been about 500,000*l.* behind 1883. Comparing 1892 with 1886, the first year of recovery from the period of depression just referred to, the gross revenue of the companies has increased by no less than 12½ million pounds.

Passenger Traffic.

As usual, we proceed to analyse the receipts from traffic further with the view of showing the particular items of receipts from passenger and goods traffic in which increase or diminution has occurred. Taking first the passenger traffic receipts we have the following figures:—

Receipts from—	1892.	1891.	Increase.	
			Amount.	Per cent.
Ordinary passengers:—	£	£	£	
First class - -	3,122,000	3,144,000	*22,000**	*0·7**
Second class - -	2,376,000	2,527,000	*151,000**	*6·0**
Third class - -	22,217,000	21,810,000	407,000	1·9
Season-ticket holders - -	2,538,000	2,433,000	105,000	4·3
Excess luggage, mails, &c. -	5,410,000	5,217,000	193,000	3·7
Total - -	35,663,000	35,131,000	532,000	1·5

* Decrease.

It will be seen from this table that there was a decrease in the first-class passenger receipts last year amounting to ·7 per cent., and this was in continuation of a decrease of somewhat larger proportions in 1891 compared with 1890. The inelasticity of the revenue derived from first-class passengers is a fact worthy of notice when considered in connection with the abolition of the second-class traffic on some lines. In the last

two years there has been a reduction in the first-class passenger receipts amounting to 72,000*l.*, or over 2¼ per cent., the second-class receipts having also declined in the same time by 269,000*l.*, or more than 10 per cent. The receipts from third-class traffic, on the other hand, still continue to grow, though the rate of expansion last year was not so great as in the two or three years immediately preceding. As was the case in 1891 compared with 1890, however, the reduction in the first and second-class passenger revenue is largely counterbalanced by the increase which has occurred in the receipts from season-ticket holders, and putting aside the instances of entire abolition of second-class traffic which have occurred, it is evident that a large part of the slow rate of increase or of the positive reductions which have taken place in the first and second-class receipts in recent years must be due to the increasing use by the travelling public of the facilities afforded by the season-ticket system. The receipts from excess luggage, mails, &c., also show a considerable increase, and in this case the increase is in continuation of a movement which has been going on for years past without a break. But it is still to the third-class passenger that the railway companies have to look for the bulk of their passenger traffic revenue. Considerably over 60 per cent. of the receipts from passenger traffic last year were derived from this one class, and it may be noticed that the record of receipts from third-class passengers has been one of continuous increase since the recovery from the depression of 1884–86. Since 1886, when the total third-class receipts stood at just over 18,000,000*l.*, the increase which has occurred under this head has been nearly 4¼ millions, or no less than 23 per cent.

As bearing upon the falling off in the second-class passenger receipts it may be mentioned that this class of traffic was totally discontinued at some date during the year over the following lines, viz.: Cheshire Committee's lines; Hull, Barnsley, and West Riding Junction; Manchester, Sheffield, and Lincolnshire; Sheffield and Midland; North British; Macclesfield Committee's lines; and Methley Joint Railway. The reduction in the second-class receipts of these lines, however, compared with those of 1891 only accounts for 19,000*l.* out of the total falling off of 151,000*l.* above referred to. But there was also a partial cessation of second-class bookings over the Great Northern system, this company having abolished second-class traffic with respect to stations north of Hatfield, with the result that a further 29,000*l.* of the total reduction is accounted for, leaving about 100,000*l.* to be spread over the different other undertakings.

The point as to the increase in the receipts from season-ticket holders becomes an interesting one when it is remembered that for some time past those receipts have been advancing at a more rapid rate, relatively, than those from other sources of passenger traffic. In 1889 there was an increase under this head of 7·1 per cent. over 1888; 1890 was 5·5 per cent. above 1889; 1891, 5·0 per cent. above 1890; and now we have an increase in 1892 of 4·3 per cent. over 1891. Ten years ago the season-ticket receipts were in amount only about half those from second-class ordinary passengers, whereas in 1892 they were about 160,000*l.* in advance of those receipts. It of course remains to be seen how far this particular description of railway business may still be capable of development.

We are again enabled by the courtesy of the railway companies to apportion the receipts from season and periodical ticket holders among the various classes to which they belong, with a view to the completion of the statement as to passenger receipts. The following table gives this complete information:—

RECEIPTS from FIRST, SECOND, and THIRD CLASS ORDINARY PASSENGERS and SEASON-TICKET HOLDERS.

Receipts from	1892.	1891.	Increase.	
			Amount.	Per cent.
Ordinary and season ticket passengers:—	£	£	£	
First class	4,149,000	4,136,000	13,000	0·3
Second class	3,213,000	3,348,000	†*135,000*	†*4·0*
Third class	22,888,000	22,428,000	460,000	2·1
*Total	30,253,000*	29,914,000*	339,000	1·1

* Including small amounts on account of season-ticket passengers, unclassed, viz., 2,877*l.* in 1892 and 1,914*l.* in 1891. † Decrease.

The inclusion of the season-ticket receipts, it will be observed, gives a somewhat different complexion to the figures of receipts from the various classes of passengers. So far as the third-class receipts are concerned only a trifling difference is made by excluding or including the season or periodical tickets of that class, the rate of increase in the one case being 1·9 per cent., and in the other 2·1 per cent. But the decrease of ·7 per cent. in the first class becomes an increase of ·3 per cent., and the decrease of 6 per cent. in the second class is reduced to one of 4 per cent. if the season-ticket receipts of those classes are included. With regard to receipts from ordinary passengers, however, it is worthy of note that in the case of the first class the reduction was accompanied by an increase in the number of passengers carried, and that in the case of the second class the reduction in numbers which did occur was smaller in proportion than the reduction in receipts. From this fact it may be inferred as probable that the reduction in receipts from these two classes is owing to a diminishing return from the longer as distinguished from shorter journeys, the latter continuing to form a somewhat larger proportion of the whole than formerly. The numbers of third-class ordinary passengers last year also increased at a somewhat larger percentage rate than the receipts from that class.

The following table shows the number of ordinary passengers of each class conveyed during each of the last two years, excluding the journeys of season and periodical ticket holders.

	1892.	1891.	Increase.	
			Number.	Per cent.
	No.	No.		
First class	30,602,000	30,424,000	178,000	0·6
Second class	61,848,000	63,378,000	*1,530,000	*2·4
Third class	771,985,000	751,661,000	20,324,000	2·7
Total	864,435,000	845,463,000	18,972,000	2·2

* Decrease.

As between the two years 1892 and 1891, there was an increase in ordinary passenger receipts of less than 1 per cent. on the whole, whereas, as will be seen from the foregoing table, the numbers of ordinary passengers conveyed increased by nearly $2\frac{1}{4}$ per cent. This, taken in conjunction with the fact of a continued increase in the passenger train mileage, would seem to indicate that the railway companies had last year been doing the same amount of work for the travelling public for less money than formerly; but the figures are, of course, not conclusive on this point in the absence of returns of the actual passenger mileage. But the enormous preponderance of the third-class traffic is the feature in the above table which attracts attention, the increase of over 20 millions in the numbers following, as it does, increases of 27 millions in 1891, 42 millions in 1890, and $33\frac{1}{2}$ millions in 1889. There is thus an increase of $122\frac{1}{2}$ millions of third-class passengers since 1888, or an average of over 30 millions for each year, this average far exceeding that of the previous five years, during which it amounted to just over 11 millions per annum only. It has to be remarked, too, that the figures given in the above table do not represent all the work done by the railway companies in the carriage of passengers, as the journeys of season ticket holders are excluded from the account. As pointed out above, the revenue derived from season ticket holders continues to increase in a proportion somewhat in advance of that from other sources of passenger revenue, and if we assume, following the experience with regard to the different classes of ordinary passengers, that the numbers have increased in even greater proportion, it will easily be seen that the total of $864\frac{1}{2}$ million passengers would be considerably added to if it were possible to make a precise estimate of the journeys of season ticket holders.

Goods Traffic.

Turning now to the receipts from goods traffic we have to notice, as previously stated, that there was a decrease last year amounting on the whole to about 360,000*l.*, this decrease being mainly accounted for by the effect of the Durham coal strike, already

adverted to, upon the traffic returns of the North-Eastern Company. The following are the figures for each group of the goods receipts :—

Receipts from	1892.	1891.	Decrease.	
			Amount.	Per Cent.
	£	£	£	
Mineral traffic	17,845,000	18,064,000	219,000	1·2
General merchandise traffic	23,680,000	23,776,000	96,000	0·4
Live stock	1,341,000	1,390,000	49,000	3·5
Total	42,866,000	43,230,000	364,000	0·8

It will be seen from this table that the falling off in the goods revenue was not confined to any particular group. The amount of the reduction in the case of the "mineral" traffic was naturally greater than in the other two groups combined, but in per-centage proportion the reduction was largest in the receipts from live stock traffic. It must be remembered, however, that the figures for 1891, with which those for 1892 are compared, not only showed an increase of nearly 2½ per cent. upon the totals for 1890, but were, in addition, larger than in any previous year in the history of the railways of the country, and although there has been a decline from the 1891 standard the whole of the ground gained in that year has not been lost. The 1892 returns for goods traffic are still in advance of those for 1890.

Coincidently with the reduction in the receipts from goods traffic there has been, as might naturally be expected, a reduction in the tonnage of goods conveyed, although, as will be noticed, the falling off in the tonnage has been at a lower proportionate rate than that in the receipts. The following is the comparison as regards tonnage conveyed during 1891 and 1892 :—

——	1892.	1891.	Decrease.	
			Amount.	Per Cent.
	Million Tons.	Million Tons.	Million Tons.	
Minerals conveyed	221·1	221·5	0·4	0·2
General merchandise conveyed	88·5	88·8	0·3	0·3
Total*	309·6	310·3	0·7	0·2

* Exclusive of tonnage unclassified.

The preponderating item as regards reduction of receipts from goods traffic is, as above noticed, the mineral class, for which we have a reduction of 1·2 per cent. The tonnage of "minerals" conveyed, however, has only declined by ·2 per cent., so that here again, as in the case of the passenger traffic, we may perhaps infer that the companies were doing the same amount of work in 1892 for less money than formerly. The close correspondence between the proportionate falling off in the receipts from "general merchandise" and the tonnage conveyed under that heading would seem to forbid such an assumption in that case, and with regard to live stock there are as yet no returns of numbers carried.

We quote below, as usual, the figures of the production of coal and iron, together with those of coal shipped coastwise and to foreign ports, which we obtain from the "Mineral Statistics" for 1892. These figures will be seen to corroborate to a large extent those we have had occasion to refer to respecting tonnage conveyed by railways, and seem to point to a diminution in the trade and industry of the country last year.

Quantity of	1892.	1891.	Increase (+) or Decrease (−).	
			Amount	Per cent.
	Tons.	Tons.	Tons.	
Coal raised	181,787,000	185,479,000	(−)3,692,000	(−) 2·0
Iron ore raised	11,313,000	12,778,000	(−)1,465,000	(−)11·5
Pig iron produced	*6,709,000	*7,406,000	(−) 697,000	(−) 9·4
Coal shipped coastwise	14,989,000	14,811,000	(+) 178,000	(+) 1·2
Coal exported abroad	†29,048,000	†29,497,000	(−) 449,000	(−) 1·5

* Including the quantity produced from foreign ores.

† Excluding coal shipped for the use of steamers engaged in the foreign trade.

Train Mileage.

To complete the statement as to work done by the railway companies last year, it only remains to refer to the figures of the mileage travelled by passenger and goods trains. The following table gives these figures and compares them with the corresponding figures for 1891 :—

—	Passenger Trains.	Goods Trains.	Total, including Mixed Trains.
	Million Miles.	Million Miles.	Million Miles.
1892	175·9	148·5	327·8
1891	171·8	148·5	323·6
Increase -	4·1 or 2·4 per cent.	—	4·2 or 1·3 per cent.

There was thus an increase of 2·4 per cent. in the passenger train-mileage coupled with an increase of 1·5 per cent in the passenger traffic receipts and of 2·2 per cent. in the number of ordinary passengers conveyed. On the other hand the goods train mileage remained at almost the same figure as in 1891, while the goods revenue decreased by ·8 per cent. and the tonnage of minerals and general merchandise conveyed decreased by ·2 per cent.

On reference to the table No. 13 in the Appendix it will be seen that following the experience of 1891 there was again a reduction in the train-mileage receipts, the 58·12*d.* per train mile in 1891 having fallen to 57·49*d.* in 1892. There was thus a reduction of over a half-penny in the receipts for every train-mile run last year, and this was in continuation of a somewhat smaller decrease in 1891 compared with 1890. Since 1890 there has been a reduction in the gross earnings per train-mile of nearly $1\frac{1}{4}d.$ and the average train-mileage receipt has fallen back to almost exactly the level of that for 1888. To this result both passenger and goods traffic have contributed a share, though as was the case in 1891, the fall in the receipt from goods traffic would appear to have been larger than in the receipt from passenger traffic per train-mile.

Working Expenditure.

As has been previously pointed out the whole of the small increase in the revenue earned last year was entirely swept away by the increase which occurred in the working expenditure. This is really a repetition of the results brought out by the returns of 1891 and 1890, the increase in the working expenditure of each of the last three years having been greater in amount, and of course greater in proportion, than the increase in the revenue. At the same time it has to be stated that the increase in the working expenses of 1892 was not anything like so great as that which occurred in the two previous years, the increases in each of the last three years having been :—

	Amount.	Per Cent.
	£	
1892 over 1891 - - - -	573,000	1·3
1891 „ 1890 - - -	1,956,000	4·5
1890 „ 1889 - - - -	3,094,000	7·7

One of the principal causes of this slackening in the rate of increase is the reduction which occurred last year in the price of coal, while the main cause of the increase which is actually recorded is to be found in the additions to the wages bill.

The following table gives the total amount of each of the four principal branches of expense :--

	1892.	1891.	Increase.
	Million £	Million £	Million £
Maintenance of way, works, and stations	7·4	7·3	0·1
Locomotive power	12·6	12·7	*0·1
Repairing and renewing carriages and waggons	4·0	4·0	—
Traffic expenses	14·1	13·8	0·3

* Decrease.

There was thus an actual decrease in the cost of locomotive power notwithstanding an addition to the train-mileage run, while the increases under "maintenance of way, &c." and "traffic expenses" mainly arose through increases in the amount of wages paid to railway employés. Looking at the complete statement of expenses given in the appended Table No. 11, one item, namely that of "rates and taxes" will naturally attract attention. Under this head, as will be seen, there was an increase last year amounting to 122,000*l.*, or at the rate of 5 per cent., the actual figures being 2,246,000*l.* in 1891 and 2,368,000*l.* in 1892. It will be observed, too, that the decline in the receipts from first and second-class passengers was accompanied by a slight falling off in the amount of "Government Duty" paid; and another feature of the expenditure account is the fact that there were last year appreciable increases in the amounts paid as "compensations" for personal injury and for damage and loss of goods.

With a view to throwing some light on the question of the effect of variations in the price of materials and of increased wages as contributing to the rise in the total working expenses, we have continued the examination of the printed half-yearly accounts of the leading companies which we made in the two previous years. The particulars which we have thus obtained will be found in the Appendix (Table No. 18), and it may be stated that the companies for which details are there given are accountable for no less than 38,754,000*l.* out of the 45,718,000*l.* which was the total working expenditure of the year. In other words, they represent nearly 85 per cent. of the whole expenditure. Taking first the particulars respecting the cost of coal and materials used in the working and repairing of engines, we get the following figures for the fifteen leading lines :--

	Expenditure on Coal and Coke.	Expenditure on Materials in Repairing Department.
	£	£
In 1889	2,317,000	1,283,000
„ 1890	3,149,000	1,315,000
„ 1891	3,491,000	1,347,000
„ 1892	3,290,000	1,338,000

After very considerable increases, therefore, in 1890 and 1891, especially as regards coal and coke, a reduction has occurred which, considering the additional quantity of fuel required to be used on account of the increased train-mileage in the period, might be assumed to have reduced the expenditure under this head to nearly the level of 1890. If the reduction in the cost of fuel had continued throughout the whole of this year it could hardly have failed to exercise a considerable influence upon the figures of expenditure which will have to be referred to a year hence.

Turning to the figures as to wages we get the following particulars for the same fifteen companies for the last four years:

	In Locomotive Department.		In Traffic Department.
	Working of Engines.	Repairing and Renewing Engines.	
	£	£	£
In 1889	3,160,000	1,508,000	8,167,000
„ 1890	3,436,000	1,553,000	8,663,000
„ 1891	3,660,000	1,611,000	9,146,000
„ 1892	3,744,000	1,622,000	9,405,000

On the whole, then, these fifteen companies have increased their payments for wages in the above departments by over 1,900,000*l.* since 1889, and assuming the smaller companies to have increased their wages accounts in the same proportion we find that in the last three years there has been an addition of over 2¼ million pounds paid to railway servants in the locomotive and traffic departments only. While, however, there was an increase under each of the above heads last year that increase was considerably less than in either of the two previous years, the gross increase being 354,000*l.* as compared with 765,000*l.* in 1891 over 1890, and 817,000*l.* in 1890 over 1889. Of course this increase of wages paid must not be ascribed entirely to increases in rates paid to individuals, the larger portion of it being probably caused by additions to the numbers employed, these additions in turn being accounted for by the requirements of increasing traffic and in some cases by increased staff rendered necessary by reductions in hours of labour. Had wages and prices remained at the level of 1889 during the last three years, the aspect of the returns from the shareholders' point of view would have been considerably different to that which they have really assumed.

In connection with the question of prices, a statement was given in the report published a year ago of the approximate price of coal at the mines and of the average prices of coal and of iron and steel rails exported, and it was remarked with regard to the figures then quoted that "it would seem as if there may possibly be some slight "decline in the cost of coal to the railway companies to chronicle next year, many of "the railway contracts being settled some time in advance, but the decline, if any, can "scarcely be large." From the figures already adverted to it will be seen that this forecast has been justified by events. The following table continues the particulars as to prices to which reference is made.

Years.	Approximate Price of Coal at the Mines, according to the "Mineral Statistics."	Average Export Prices, computed from the Quantities and Declared Values of the Exports.	
		Of Coal.	Of Iron and Steel Rails and Tie Rods.
	Per Ton.	Per Ton.	Per Ton.
1887	4*s.* 9·87*d.*	8·19*s.*	4·40*l.*
1888	5*s.* 0·68*d.*	8·27*s.*	4·33*l.*
1889	6*s.* 4¼*d.*	10·06*s.*	4·61*l.*
1890	8*s.* 3*d.*	12·39*s.*	*5·47*l.*
1891	8*s.* 0*d.*	11·96*s.*	*5·03*l.*
1892	7*s.* 3*d.*	10·89*s.*	*4·40*l.*

* Rails only.

Turning now to the figures giving the results of the calculations which have, as usual, been made respecting the expenditure per train-mile under the different headings, we have to notice a virtually stationary condition of affairs. The increases in the train-

mileage expenditure which occurred, and which were mainly caused by increased payments for wages and "rates and taxes" were all but balanced by the reductions under other heads and principally under that of "locomotive power." The full effect of the fall in the price of coal coupled with an increased train-mileage thus becomes apparent. The following are the figures of train-mileage expenditure in the last two years under each head of outlay :—

Expenditure on account of	Cost per Train-mile.		Increase or Decrease in 1892.	
	1892.	1891.	Increase.	Decrease.
	d.	*d.*	*d.*	*d.*
Maintenance of way	5·42	5·40	0·02	—
Locomotive power	9·22	9·45	—	0·23
Rolling stock	2·96	2·95	0·01	—
Traffic expenses	10·35	10·22	0·13	—
General charges	1·42	1·39	0·03	—
Rates and taxes	1·73	1·66	0·07	—
Government duty*	0·24	0·25	—	0·01
Compensations :				
Personal injuries	0·15	0·12	0·03	—
Damage to goods	0·21	0·19	0·02	—
Legal and Parliamentary expenses	0·20	0·24	—	0·04
Miscellaneous	0·36	0·37	—	0·01
Total	32·24	32·22	0·02	—

* For Great Britain only. The railway passenger duty is not charged in Ireland.

From this table it would appear that under existing circumstances, and having regard to economical working as well as to the safety of the travelling public, the limit of expense remains at about the level of 2*s.* 8*d.* per train-mile run. In referring to similar calculations for 1891 as compared with 1890 in the report issued last year it was remarked that "the inference which might reasonably be drawn from the figures was "that for a year or two at least no great reduction in the cost of working could be "looked for;" that "the minor items of expense per train-mile were already at a low "level, and that much further reduction therein was not to be expected;" and that with regard "to the larger items in which wages and the cost of materials form the "principal elements, the indication seemed to be that no great fall in prices was to be "immediately anticipated, while experience showed the difficulty of effecting reductions "in the cost for labour when once increased." These remarks, which have been fully justified by events, may well be repeated on this occasion, any qualification as to a decline in the price of coal, &c., in 1892 affecting the returns for 1893 being largely nullified by the probable effects of the dispute in the coal trade which is now proceeding. It is not probable that any reduction in the outlay per train-mile will be shown when the calculations for the current year come to be worked out.

The following table, which is continued from last year's report, is inserted in order to show the variations in the net amounts earned per train-mile run during each of the last 10 years :—

Years.	Traffic Receipts.		Working Expenditure.		Net Earnings.	
	Amount per Train-Mile.	Increase (+) or Decrease (−).	Amount per Train-Mile.	Increase (+) or Decrease (−).	Amount per Train-Mile.	Increase (+) or Decrease (−).
	d.	*d.*	*d.*	*d.*	*d.*	*d.*
1883	60·88	(−) 1·02	32·17	(−) 0·30	28·71	(−) 0·72
1884	59·56	(−) 1·32	31·59	(−) 0·58	27·97	(−) 0·74
1885	58·19	(−) 1·37	30·93	(−) 0·66	27·26	(−) 0·71
1886	57·69	(−) 0·50	30·41	(−) 0·52	27·28	(+) 0·02
1887	57·63	(−) 0·06	30·26	(−) 0·15	27·37	(+) 0·09
1888	57·48	(−) 0·15	29·97	(−) 0·29	27·51	(+) 0·14
1889	58·37	(+) 0·89	30·54	(+) 0·57	27·83	(+) 0·32
1890	58·61	(+) 0·24	31·82	(+) 1·28	26·79	(−) 1·04
1891	58·12	(−) 0·49	32·22	(+) 0·40	25·90	(−) 0·89
1892	57·49	(−) 0·63	32·24	(+) 0·02	25·25	(−) 0·65

It will be seen from this table that in both receipts and expenses there was a continuous decrease in each year from 1883 to 1888 inclusive, the fall in the receipts in the period

being 4·42*d.* and that in the expenses 2·50*d.* On balance this left the net earnings of 1888, 1·92*d.* per train-mile below those for 1883. In 1889 and 1890 there was an increase in both receipts and expenses per train-mile, but taking the two years together the increase was somewhat larger in the expenses than in the receipts, the effect upon the net earnings being a further reduction of ·72*d.* per train-mile. In 1891 and 1892 there was an increased expense coupled with a diminished receipt per train-mile, which caused a still further reduction in the net earnings, amounting to 1·54*d.* per train mile. From 1886 to 1889 the net earnings per train-mile had been slightly increasing, the whole rise in the period being ·57*d.*; but since 1889 there has been a heavy fall, the increase just referred to having been all swept away and a further reduction of 2*d.* per train-mile having occurred.

Net Earnings and Dividends.

This brings us to the consideration of the actual net earnings of the year and the effect of the reduction in these, which we have already referred to, upon the average dividend and interest distributed. The total amount of the net earnings of 1892 was 36,374,000*l.* which, compared with the amount for 1891, shows a decrease of 357,500*l.* This is a somewhat worse result than that brought out either by a comparison of the returns of 1891 with those for 1890 or of the returns of 1890 with those for 1889. The unfavourable feature of the returns for all three years, however, is that there has been a reduction of net earnings in each, the respective reductions being 171,000*l.* in 1890, 28,000*l.* in 1891, and, as above stated, 357,500*l.* in 1892. The amounts are not large in any instance, their combined effect only representing a reduction of about 1½ per cent. upon the total for 1889 when the net earnings were the highest on record. But it must be remembered that these reduced net earnings have had to be distributed over a capital which has been continuously increasing in amount, the real increase in the paid-up capital in the three years (making due allowance on account of merely nominal additions), being over 49,000,000*l.*, or 5½ per cent. on the capital of 1889. Consequently there has been in each year a reduction in the proportion of net earnings to paid-up capital, viz., from the 4·21 per cent. of 1889 to 4·10 per cent. in 1890, to 4·0 per cent. in 1891, and to 3·85 per cent. in 1892. And to complete the statement it has to be mentioned that this rate of 3·85 per cent. is absolutely the lowest since full particulars began to be collected 30 years ago or more. As might be expected the effect of the decline in the proportion of net earnings to capital has affected the return on ordinary capital more adversely than that on other descriptions. The computed average rate of dividend or interest has fallen off, it is true, in the case of each of the three groups of "ordinary," "guaranteed and preferential," and "loans and debenture stocks," but while the fall in the case of the guaranteed and preferential since 1889 has been only ·08 per cent., and that in the loans and debenture stock ·23 per cent., the average for the ordinary has been reduced by ·68 per cent. in the same period. In the two former cases, also, it will be observed that together with the decline stated in the average rate there was an actual increase each year in the amount computed as paid; with regard to the "ordinary," however, the case was reversed, there being a decrease of considerable proportions each year in the amounts computed as paid upon this description of capital.

The following table summarizes in the usual form the particulars given in Table No. 4 in the Appendix, and shows the amounts of each description of capital classed according to rates per cent. of dividend or interest paid :—

Rate of Interest or Dividend.	Ordinary.		Guaranteed.		Preferential.		Loans and Debenture Stock.	
	Amount of Capital.	Per cent. of Total.	Amount of Capital.	Per cent. of Total.	Amount of Capital.	Per cent. of Total.	Amount of Capital.	Per cent. of Total.
	£		£		£		£	
Nil - - -	49,588,165	14·3	730,761	0·7	16,949,389	6·9	300	—
Not above 1 per cent. -	11,853,913	3·4	—	—	100,000	0·1	367,365	0·1
Above 1 & not over 2 per cent.	9,295,567	2·7	201,180	0·2	192,320	0·1	79,071	—
„ 2 „ 3 „ -	32,483,535	9·3	17,000	—	2,905,000	1·2	61,462,065	24·5
„ 3 „ 4 „ -	52,791,223	15·2	57,665,238	57·1	168,808,071	69·0	134,136,453	53·4
„ 4 „ 5 „ -	61,694,511	17·7	38,120,246	37·8	53,160,267	21·7	53,453,642	21·3
„ 5 „ 6 „ -	80,670,872	23·2	4,121,580	4·1	2,492,764	1·0	1,627,192	0·7
„ 6 „ 7 „ -	45,152,887	13·0	—	—	—	—	—	—
„ 7 „ 8 „ -	2,068,409	0·6	—	—	—	—	11,200	—
„ 8 „ 9 „ -	575,583	0·2	—	—	5,340	—	—	—
„ 9 „ 10 „ -	1,526,220	0·4	50,000	0·1	—	—	—	—
Total -	347,700,876	100·0	100,906,005	100·0	244,613,151	100·0	251,137,288	100·0

It will be noticed upon comparing this table with a similar one published in last year's report that two or three important differences have occurred as regards the grouping of ordinary capital. These are, of course, in the nature of retrogressions from groups receiving comparatively high rates of dividend to classes receiving lower rates, the principal alterations observable in the grouping being in the cases of capital receiving dividends ranging from 4 to 7 per cent. In the group receiving between 6 and 7 per cent. there has been a fall of 77,600,000*l.*, viz., from 122,800,000*l.* to about 45,200,000*l.*, the whole of this difference, and something more in addition, being accounted for by increases in the two classes immediately below. The class receiving from 5 to 6 per cent. shows an increase of 51,400,000*l.*, viz., from about 29,300,000*l.* to about 80,700,000*l.*; and the 4 to 5 per cent. class, an increase of 30,600,000*l.*, from 31,100,000*l.* to 61,700,000*l.* In addition to these two increases there was a further one of 8,500,000*l.* in the 3 to 4 per cent. class, the increases in the three groups amounting together to 90,500,000*l.* On the other hand there was a decrease in the 2 to 3 per cent. class of 6,000,000*l.*, which added to the other decrease of 77,600,000*l.* above mentioned, gives a total of 83,600,000*l.*, which sum is about 7,000,000*l.* short of the sum of the additions to the increased groups, and 7,000,000*l.* being at the same time almost exactly the amount of the new ordinary capital paid-up in the year. The greater portion of this addition of 7,000,000*l.* to the ordinary capital, it should be mentioned, was occasioned by the requirements of companies (principally the larger ones) whose lines were already open for traffic and consequently fell into the groups receiving dividend. The amounts receiving no dividend or very little and those receiving very high rates accordingly remain at about the same level as in the previous year. Broadly, however, it will be seen that, in spite of the unfavourable features of the year's working, no less a sum than 240 millions out of the total ordinary capital of 348 millions, that is about 69 per cent., received dividends ranging from 3 to 7 per cent. Of the other descriptions of capital, amounting in the aggregate to 596½ millions, over 505 millions, or nearly 85 per cent., will be seen to have fallen into the classes bearing rates of dividend or interest above 3 and not exceeding 5 per cent. The following table, showing the variations which have occurred in the grouping of the ordinary capital according to dividends during the last four years, will be of interest. It continues a corresponding table given in last year's report, and will enable the variations which have occurred to be easily traced for the whole period since the proportion of net earnings to total capital began to decline from the point reached in 1889, the highest point, that is, for any of the last nine years :—

Rates of Dividend.	1889.		1890.		1891.		1892.	
	Amount.	Per cent. of Total.	Amount.	Per cent. of Total.	Amount.	Per cent. of Total.	Amount	Per cent. of Total.
	Million £		Million £		Million £		Million £	
Nil - - -	44·5	13·6	44·7	13·5	47·0	13·8	49·6	14·3
Not above 1 per cent. - -	2·6	0·8	10·8	3·2	13·6	4·0	11·8	3·4
Above 1 and not over 2 per cent.	2·9	0·9	3·3	1·0	9·6	2·8	9·3	2·7
„ 2 „ 3 „ -	37·4	11·4	35·7	10·8	38·5	11·3	32·5	9·3
„ 3 „ 4 „ -	25·0	7·7	30·1	9·1	44·3	13·0	52·8	15·2
„ 4 „ 5 „ -	55·6	17·0	58·7	17·7	31·1	9·1	61·7	17·7
„ 5 „ 6 „ -	66·1	20·3	24·3	7·3	29·3	8·6	80·7	23·2
„ 6 „ 7 „ -	20·7	6·3	54·9	16·5	122·8	36·1	45·1	13·0
„ 7 „ 8 „ -	67·4	20·7	67·5	20·3	2·7	0·8	2·1	0·6
„ 8 „ 9 „ -	3·5	1·1	1·0	0·3	0·2	0·1	0.6	0·2
Over 9 per cent. - -	0·5	0·2	1·1	0·3	1·2	0·4	1·5	0·4
Total - -	326·2	100·0	332·1	100·0	340·3	100·0	347·7	100·0

Summary.

It may be convenient if, in conclusion, we bring together, in the usual tabular form, the figures respecting the principal features of the railway returns for 1892 to which we have referred in the foregoing pages.

SUMMARY of the MILEAGE, CAPITAL, TRAFFIC RECEIPTS, WORKING EXPENSES, and NET EARNINGS of the RAILWAYS of the UNITED KINGDOM in 1891 and 1892 compared.

	1892.	1891.	Increase in 1892.		Decrease in 1892.	
			Amount.	Per cent.	Amount.	Per cent.
	Miles.	Miles.	Miles.			
Mileage	20,325	20,191	134	0·7	—	—
Of which double or more	11,158	11,065	93	0·8	—	—
	£	£	£		£	
Capital	944,357,320	919,425,121	24,932,199	2·7	—	—
Capital per mile open	46,463	45,536	927	2·0	—	—
Ordinary capital	347,700,876	340,361,063	7,339,813	2·2	—	—
Receipts :—	£	£	£		£	
Passenger	35,662,816	35,130,916	531,900	1·5	—	—
Goods	42,866,498	43,230,717	—	—	364,219	0·8
Miscellaneous	3,562,726	3,498,974	63,752	1·8	—	—
Total	82,092,040	81,860,607	231,433	0·3	—	—
Working expenditure	45,717,965	45,144,778	573,187	1·3	—	—
Net earnings	36,374,075	†36,731,624	—	—	357,549	1·0
	d.	*d.*	*d.*		*d.*	
Receipts per train-mile from traffic	57·49	58·12	—	—	0·63	1·1
Expenditure per train-mile, exclusive of harbour, &c. expenses	32·24	32·22	0·02	0·1	—	—
Net earnings per train-mile	25·25	25·90	—	—	0·65	2·5
Per-centage of net earnings on capital	3·85	4·00	—	—	0·15	3·7
Dividend paid on ordinary capital	*3·98	*4·24	—	—	0·26	6·1

* These per-centages are calculated on amounts a little in excess of the true totals. *See* note to Table 3, Appendix.
† Including 15,795*l.* special receipts.

From this table it appears that the general results shown by last year's railway returns can scarcely be looked upon as satisfactory to the shareholder. The table has, however, its encouraging features for him, when considered in connection with the observations we have already made and which we may here briefly recapitulate. First among these encouraging features the increase of capital paid up may be mentioned, indicating, as it does, the favourable regard which investors entertain for railway undertakings. Secondly, the increase in gross receipts, which would have undoubtedly been much larger but for the effect upon the goods revenue of the strike of the Durham coal miners which was in progress at the beginning of the year. Even the increase in expenditure, although it brought about a reduction in the net earnings available for distribution among shareholders, is at a much lower rate than that of the two preceding years, and signs are not wanting of a slackening of the rate of advance in the amount of payments for wages. Still, while a reduction in expenditure is scarcely to be looked for, it will be something for railway shareholders to congratulate themselves upon if, when the accounts for 1893 are made up, it is found that there has been but little further increase. Judging from appearances some such result seemed probable up to the date of the commencement of the great coal dispute now in progress. This dispute cannot fail to exercise an injurious influence upon the traffic returns of the year, but it is not within our province to make further comment upon the prospects of 1893.

We have this year incorporated in Tables 15 and 16 in the Appendix, which give the results of elaborate calculations respecting the train-mileage receipts and expenses under different heads for the principal lines, particulars for several additional important companies. The tables themselves and the variations which they show as regards different railway systems are well worthy of perusal.

It is a matter for regret that we are unable to make our report upon these subjects at an earlier period of the year, but the facts and figures contained in it are dependent upon the receipt of returns from the railway companies, and in some cases these are not received until considerable pressure (with consequent lapse of time) has been brought to bear upon the companies in default.

We have, &c.,

Board of Trade,
August 1893.

R. GIFFEN.
FRANCIS J. S. HOPWOOD.

APPENDIX.

NOTE.—The Receipts from Miscellaneous Sources, and the Expenditure for Steamboats, Canals, Harbours, and Docks, are not included in any of the following Tables.

No. 1.—LENGTH OF RAILWAYS open for Traffic on the 31st December in each of the Years from 1883 to 1892.

	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.
	Miles.	*Miles.*	*Miles.*	*Miles.*	*Miles.*	*Miles.*	*Miles.*	*Miles.*	*Miles.*	*Miles.*
In ENGLAND AND WALES -	13,215	13,340	13,612	13,678	13,825	13,982	14,034	14,119	14,156	14,242
„ SCOTLAND - -	2,964	2,999	2,982	3,022	3,079	3,097	3,118	3,162	3,172	3,188
„ IRELAND - - -	2,502	2,525	2,575	2,632	2,674	2,733	2,791	2,792	2,863	2,895
„ UNITED KINGDOM -	18,681	18,864	19,169	19,332	19,578	19,812	19,943	20,073	20,191	20,325

No. 2.—AMOUNT of ORDINARY, GUARANTEED and PREFERENTIAL, and LOAN CAPITAL, and PROPORTION PER CENT. of each to the TOTAL CAPITAL of RAILWAY COMPANIES in the UNITED KINGDOM on 31st December in each of the Years from 1883 to 1892.

Year.	Ordinary.		Guaranteed and Preferential.		Loans and Debenture Stock.		Total.	
	Amount.	Proportion to Total Capital.	Amount.	Proportion to Total Capital.	Amount.	Proportion to Total Capital.	Amount.	Proportion to Total Capital.
	£	Per cent.	£	Per cent.	£	Per cent.	£	Per cent.
1883 - -	293,437,106	37	295,561,021	38	195,923,185	25	784,921,312	100
1884 - -	298,983,446	37	301,412,847	38	201,068,074	25	801,464,367	100
1885 - -	302,254,759	37	308,129,163	38	205,474,133	25	815,858,055	100
1886 - -	305,202,082	37	314,451,644	38	208,690,528	25	828,344,254	100
1887 - -	314,795,317	37	318,824,385	38	212,351,952	25	845,971,654	100
1888 - -	322,338,446	37	323,504,819	38	218,852,698	25	864,695,963	100
1889 - -	326,229,558	37	327,446,627	37	222,918,981	26	876,595,166	100
1890 -	332,070,153	37	332,889,003	37	232,512,870	26	897,472,026	100
1891 - -	340,361,063	37	339,182,845	37	239,881,213	26	919,425,121	100
1892 - -	347,700,876	37	345,519,156	36	251,137,288	27	944,357,320	100

No. 3.—AMOUNT and AVERAGE RATE of DIVIDEND on each DESCRIPTION OF CAPITAL in each of the Years from 1883 to 1892.

Year.	Ordinary Capital.		Guaranteed and Preferential Capital.		Loans and Debenture Stock.		Total.	
	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.
	£		£		£		£	
1883 -	13,725,933	4·68	12,601,797	4·26	8,254,643	4·21	34,582,373	4·41
1884 -	12,982,094	4·34	12,785,282	4·24	8,473,692	4·21	34,241,068	4·27
1885 -	12,222,828	4·04	12,846,963	4·17	8,598,446	4·18	33,668,237	4·13
1886 -	12,039,316	3·94	13,025,944	4·14	8,727,906	4·18	33,793,166	4·08
1887 -	12,832,775	4·08	13,199,786	4·14	8,871,896	4·18	34,904,457	4·13
1888 -	13,615,997	4·22	13,320,992	4·12	9,091,770	4·15	36,028,759	4·17
1889 -	15,209,927	4·66	13,484,048	4·12	9,158,733	4·11	37,852,708	4·32
1890 -	14,988,864	4·51	13,734,266	4·13	9,287,705	3·99	38,010,835	4·24
1891 -	14,433,657	4·24	13,831,973	4·08	9,466,110	3·95	37,731,740	4·10
1892 -	13,842,281	3·98	13,964,330	4·04	9,754,567	3·88	37,561,178	3·98

NOTE.—The amounts in the above table are slightly in excess of the true totals, as some companies have invested a small portion of their capital in the stocks and shares of other companies.

No. 4.—Statement showing the various Rates of Dividend or Interest Paid on Capital in 1892, and the Amounts on which each Rate was Paid.

Ordinary Capital.				Guaranteed Capital.		Preference Capital.		Loans.		Debenture Stock.	
Rate of Dividend.	Amount at each Rate.	Rate of Dividend.	Amount at each Rate.	Rate of Dividend.	Amount at each Rate.	Rate of Dividend.	Amount at each Rate.	Rate of Interest.	Amount at each Rate.	Rate of Interest.	Amount at each Rate.
Per cent.	£	Per cent.	£	Per cent.	£	Per cent.	£	Per cent.	£	Per cent.	£
*Nil.	6,630,945		(*continued.*)	*Nil.	243,121	*Nil.	4,295,395	Nil.	300	$\frac{1}{6}$	367,365
*3	113,680	$3\frac{3}{8}$	15,000	*4	24,827	Nil.	‡12,653,994	$2\frac{1}{3}$	150	$1\frac{1}{3}$	50,000
*$3\frac{1}{2}$	133,720	$3\frac{1}{2}$	1,603,865	Nil.	† 487,640	$\frac{3}{20}$	75,000	$2\frac{3}{4}$	5,000	2	29,071
Nil.	42,957,220	$3\frac{5}{8}$	16,740,995	$1\frac{1}{2}$	100,000	$\frac{1}{8}$	25,000	3	456,054	$2\frac{1}{2}$	250,000
$\frac{1}{4}$	135,472	$3\frac{7}{8}$	1,338,350	2	101,180	$1\frac{61}{320}$	56,000	$3\frac{1}{4}$	676,307	3	60,750,861
$\frac{3}{8}$	9,163,650	4	18,297,303	3	17,000	$1\frac{1}{4}$	75,000	$3\frac{1}{2}$	1,376,627	$3\frac{1}{4}$	150,000
$\frac{1}{2}$	647,299	$4\frac{1}{20}$	1,014,000	$3\frac{1}{2}$	555,980	$1\frac{3}{4}$	61,320	$3\frac{5}{8}$	30,000	$3\frac{1}{2}$	1,821,957
$\frac{9}{16}$	630,000	$4\frac{1}{8}$	17,520,642	4	57,084,431	$2\frac{3}{8}$	20,000	$3\frac{3}{4}$	15,183	4	125,982,049
$\frac{3}{4}$	700,150	$4\frac{1}{4}$	29,870	$4\frac{1}{5}$	10,000	$2\frac{1}{2}$	1,365,000	4	4,084,330	$4\frac{1}{4}$	5,986,004
1	577,342	$4\frac{9}{20}$	75,000	$4\frac{1}{4}$	1,797,428	3	1,520,000	$4\frac{1}{4}$	100,350	$4\frac{3}{8}$	10,000
$1\frac{1}{8}$	36,230	$4\frac{1}{2}$	4,854,695	$4\frac{1}{2}$	4,035,145	$3\frac{7}{8}$	167,700	$4\frac{1}{2}$	3,322,871	$4\frac{1}{2}$	28,355,865
$1\frac{1}{4}$	203,462	$4\frac{5}{8}$	3,200,000	$4\frac{3}{4}$	40,000	$3\frac{1}{4}$	395,198	5	1,801,149	5	13,877,403
$1\frac{1}{3}$	75,000	$4\frac{21}{25}$	35,000	5	32,237,673	$3\frac{1}{3}$	3,516,192	$5\frac{1}{2}$	9,000	6	1,486,012
$1\frac{3}{8}$	64,431	$4\frac{7}{8}$	32,549,252	$5\frac{1}{8}$	800,000	$3\frac{259}{480}$	60,000	6	132,180	8	5,400
$1\frac{17}{40}$	58,430	5	2,356,052	$5\frac{1}{2}$	180,000	$3\frac{3}{4}$	10,000	8	5,800		
$1\frac{1}{2}$	2,721,321	$5\frac{1}{4}$	1,717,589	$5\frac{3}{4}$	2,000	$3\frac{19}{20}$	6,686,184			£	239,121,987
$1\frac{5}{8}$	1,627,583	$5\frac{1}{3}$	56,280	$5\frac{5}{8}$	40,000	4	157,972,797	£	12,015,301		
$1\frac{7}{8}$	238,000	$5\frac{3}{4}$	4,518,087	6	3,099,580	$4\frac{1}{5}$	134,050				Average rate of Interest on Debenture Stock, 3·87 per cent.
2	4,271,110	$5\frac{5}{8}$	139,950	10	50,000	$4\frac{3}{5}$	34,000		Average rate of Interest on Loans, 4·18 per cent		
$2\frac{1}{8}$	12,572,850	$5\frac{7}{8}$	22,099,582			$4\frac{1}{3}$	14,578,813				
$2\frac{1}{4}$	7,641,529	$5\frac{14}{15}$	266,675	£	100,906,005	$4\frac{3}{4}$	196,885				
$2\frac{1}{2}$	2,753,610	6	51,822,709			5	38,216,519				
$2\frac{167}{240}$	15,000	$6\frac{1}{2}$	42,366,135		Average rate of Dividend on Guaranteed Capital, 4·38 per cent.	$5\frac{1}{2}$	621,870				
$2\frac{3}{4}$	8,945,501	7	2,786,752			6	1,870,894				
3	441,365	$7\frac{1}{2}$	2,068,400			$8\frac{1}{2}$	5,340				
$3\frac{1}{8}$	396,710	$8\frac{1}{3}$	23,793			£	244,613,151				
$3\frac{1}{4}$	14,036,605	$8\frac{1}{2}$	551,790								
$3\frac{7}{20}$	228,675	$9\frac{1}{3}$	1,526,220				Average rate of Dividend on Preference Capital, 3·90 per cent.				
	(*continued.*)	£	347,700,876								

Average rate of Dividend on Ordinary Capital, 3·98 per cent.

Average rate of Dividend on Guaranteed and Preference Capital, 4·04 per cent.

Average rate of Interest on Loans and Debenture Stock, 3·88 per cent.

The average rate of Dividend or Interest upon the whole, calculated upon the above amounts and at the above rates as given in the Annual Return, was 3·98 per cent.

* Capital of companies whose lines were in course of construction.

† Including 350,000*l.* on which dividend accrues from 1st January 1893.

‡ Including 1,004,000*l.* on which dividend accrues from 1st February 1893, 365,000*l.* on which dividend accrues from 15th May 1893, and 1,124,319*l.* on which dividend accrues from 1st August 1893.

No. 5.—STATEMENT showing the AMOUNTS by which the CAPITALS of the RAILWAY COMPANIES had, at the 31st December 1892, been NOMINALLY INCREASED on the CONVERSION, CONSOLIDATION, and DIVISION of their STOCKS.

[In some cases the consolidation resulted in a nominal decrease, and the Amounts by which the Capitals were so decreased are printed in *italics*.]

Name of Company.	Ordinary.	Guaranteed and Preferential.	Debenture Stock.	Total.
ENGLAND AND WALES.	£	£	£	£
Alexandra (Newport and South Wales) Docks and Railway	—	192,205	—	192,205
Brecon and Merthyr Tydfil Junction	—	—	*46,118*	*46,118*
Burry Port and Gwendreath Valley	*121,860*	*16,740*	—	*138,600*
Cambrian	—	129,757	151,449	281,206
Cornwall Minerals	63,266	80,493	108,120	251,879
Devon and Somerset	—	—	511,896	511,896
East London	840,599	—	532,101	1,372,700
Furness	—	478,375	—	478,375
Great Eastern	—	1,667,758	882,639	2,550,397
Great Northern	3,121,124	1,803,832	3,044,115	7,969,071
Great Western	*442,735*	*299,357*	—	*742,092*
Isle of Wight	154,000	16,802	37,000	207,802
Kettering, Thrapstone, and Huntingdon	100,000	112,500	—	212,500
King's Lynn Docks and Railway	—	49,750	—	49,750
Lancashire and Yorkshire	—	2,100,588	—	2,100,588
London and North-Western	1,929,839	7,443,410	—	9,373,249
London and South-Western	849,700	1,096,574	348,336	2,294,610
London, Brighton, and South Coast	—	*201,825*	—	*201,825*
London, Tilbury, and Southend	—	450	15,000	15,450
Manchester, Sheffield, and Lincolnshire	—	478,285	—	478,285
Metropolitan (Surplus Lands Capital)	2,640,915	442,043	—	3,082,958
Midland	*170,207*	4,254,833	5,988,658	10,073,284
Neath and Brecon	—	*257,453*	*73,758*	*331,211*
North-Eastern	399,200	—	—	399,200
North Staffordshire	30,140	—	—	30,140
North Wales (narrow gauge)	—	—	4,600	4,600
Rhymney	10,398	249,080	—	259,478
Severn and Wye and Severn Bridge	*147,213*	137,456	17,072	7,315
Southport and Cheshire Lines Extension	15,000	—	—	15,000
Taff Vale	3,214,284	331,941	207,147	3,753,372
Wrexham, Mold, and Connah's Quay	18,749	—	*48,909*	*30,160*
Total England and Wales at 31st December 1892	12,505,199	20,290,757	11,679,348	44,475,304
Total England and Wales at 31st December 1891	12,015,725	20,151,190	11,738,996	43,905,911
SCOTLAND.				
Caledonian	2,784,693	3,657,902	—	6,442,595
Glasgow and South-Western	442,250	721,461	—	1,163,711
Great North of Scotland	500,218	462,651	50,301	1,013,170
North British	9,163,650	2,381,364	3,265,485	14,810,499
Total Scotland at 31st December 1892	12,890,811	7,223,378	3,315,786	23,429,975
Total Scotland at 31st December 1891	12,890,811	7,223,378	50,301	20,164,490
IRELAND.				
Belfast and Northern Counties	—	55,575	—	55,575
Great Northern of Ireland	—	148,164	—	148,164
Total Ireland at 31st December 1892	—	203,739	—	203,739
Total Ireland at 31st December 1891	—	55,575	—	55,575
Total United Kingdom at 31st December 1892	25,396,010	27,717,874	14,995,134	68,109,018
Total United Kingdom at 31st December 1891	24,906,536	27,430,143	11,789,297	64,125,976

No. 6.—Total Railway Receipts and Expenditure, and Net Receipts from Railway Working, and Per-centage Proportion of Expenses to Receipts, and of Net Receipts to Total Share and Loan Capital, in each of the Years from 1883 to 1892.

Year.	Total Traffic Receipts.	Total Railway Working Expenditure.		Net Receipts from Railway Working.	
		Amount.	Proportion per cent. to Total Traffic Receipts.	Amount.	Proportion per cent. to Total Share and Loan Capital.
ENGLAND AND WALES.					
	£	£		£	
1883	57,978,298	30,579,370	52·7	27,398,928	4·21
1884	57,557,207	30,514,162	53·0	27,043,045	4·07
1885	56,700,406	30,198,294	53·3	26,502,112	3·91
1886	56,589,183	29,895,180	52·8	26,694,003	3·88
1887	57,769,493	30,444,931	52·7	27,324,562	3·89
1888	59,160,986	31,074,571	52·5	28,086,415	3·93
1889	62,691,817	32,972,045	52·6	29,719,772	4·11
1890	65,183,874	35,406,400	54·3	29,777,474	4·02
1891	66,671,503	37,147,706	55·7	29,523,797	3·89
1892	66,640,334	37,699,889	56·6	28,940,445	3·72
SCOTLAND.					
1883	7,416,046	3,900,728	52·6	3,515,318	3·57
1884	7,357,760	3,831,413	52·1	3,526,347	3·50
1885	7,185,784	3,688,247	51·3	3,497,537	3·39
1886	7,273,511	3,699,386	50·9	3,574,125	3·42
1887	7,358,764	3,705,314	50·4	3,653,450	3·42
1888	7,727,822	3,779,036	48·9	3,948,786	3·46
1889	8,032,640	3,962,516	49·3	4,070,124	3·51
1890	8,288,135	4,397,545	53·1	3,890,590	3·23
1891	8,530,923	4,562,967	53·5	3,967,956	3·24
1892	8,760,901	4,619,084	52·7	4,141,817	3·22
IRELAND.					
1883	2,815,708	1,563,508	55·5	1,252,200	3·53
1884	2,786,075	1,566,207	56·2	1,219,868	3·41
1885	2,758,777	1,540,992	55·9	1,217,785	3·42
1886	2,752,683	1,515,906	55·1	1,236,777	3·44
1887	2,786,329	1,515,426	54·4	1,270,903	3·49
1888	2,851,062	1,513,681	53·1	1,337,381	3·66
1889	2,992,600	1,640,795	54·8	1,351,805	3·65
1890	3,076,338	1,750,541	56·9	1,325,797	3·55
1891	3,159,207	1,732,827	54·9	1,426,380	3·78
1892	3,128,079	1,724,159	55·1	1,403,920	3·65
UNITED KINGDOM.					
1883	68,210,052	36,043,606	52·8	32,166,446	4·10
1884	67,701,042	35,911,782	53·0	31,789,260	3·97
1885	66,644,967	35,427,533	53·2	31,217,434	3·83
1886	66,615,377	35,110,472	52·7	31,504,905	3·80
1887	67,914,586	35,665,671	52·5	32,248,915	3·81
1888	69,739,870	36,367,288	52·1	33,372,582	3·86
1889	73,717,057	38,575,356	52·3	35,141,701	4·01
1890	76,548,347	41,554,486	54·3	34,993,861	3·90
1891	78,361,633	43,443,500	55·4	34,918,133	3·80
1892	78,529,314	44,043,132	56·1	34,486,182	3·65

No. 7.—Amount of Receipts from Passenger and Goods Traffic, and the Gross Traffic Receipts of Railway Companies in the United Kingdom in each Year from 1858 to 1892; showing also the Amount of the Increase, and the Rate of Increase per cent., of each Year over the previous Year.

Year.	Passenger Traffic.			Goods Traffic.			Gross Receipts from Traffic.		
	Receipts.	Annual Increase.		Receipts.	Annual Increase.		Receipts.	Annual Increase.	
		Amount.	Per cent.		Amount.	Per cent.		Amount.	Per cent.
	£	£		£	£		£	£	
1858 -	11,697,906			12,258,845			23,956,751		
1859 -	12,537,493	839,587	7·18	13,206,009	947,164	7·73	25,743,502	1,786,751	7·46
1860 -	13,085,756	548,263	4·37	14,680,866	1,474,857	11·17	27,766,622	2,023,120	7·86
1861 -	13,326,475	240,719	1·84	15,238,880	558,014	3·80	28,565,355	798,733	2·88
1862 -	13,911,985	585,510	4·39	15,216,573	‡*22,307*	‡*0·15*	29,128,558	563,203	1·97
1863 -	14,521,528	609,543	4·38	16,634,869	1,418,296	9·32	31,156,397	2,027,839	6·96
1864 -	15,684,040	1,162,512	8·01	18,331,524	1,696,655	10·20	34,015,564	2,859,167	9·18
1865 -	16,572,051	888,011	5·66	19,318,062	986,538	5·38	35,890,113	1,874,549	5·51
1866 -	17,395,925	823,874	4·97	20,768,429	1,450,367	7·51	38,164,354	2,274,241	6·34
1867 -	17,935,634	539,709	3·10	21,544,365	775,936	3·74	39,479,999	1,315,645	3·45
*1868 -	—	—	—	—	—	—	—	—	—
1869 -	18,811,504	†875,870	†4·88	22,263,817	†719,452	†3·34	41,075,321	†1,595,322	†4·04
1870 -	19,301,911	490,407	2·61	24,115,159	1,851,342	8·32	43,417,070	2,341,749	5·70
1871 -	20,622,580	1,320,669	6·84	26,484,978	2,369,819	9·83	47,107,558	3,690,488	8·50
1872 -	22,287,555	1,664,975	8·07	29,016,559	2,531,581	9·56	51,304,114	4,196,556	8·91
1873 -	23,853,892	1,566,337	7·03	31,821,529	2,804,970	9·67	55,675,421	4,371,307	8·52
1874 -	24,893,615	1,039,723	4·36	32,005,883	184,354	0·58	56,899,498	1,224,077	2·20
1875 -	25,714,681	821,066	3·30	33,268,072	1,262,189	3·94	58,982,753	2,083,255	3·66
1876 -	26,163,551	448,870	1·75	33,754,317	486,245	1·46	59,917,868	935,115	1·59
1877 -	26,534,110	370,559	1·42	34,109,947	355,630	1·05	60,644,057	726,189	1·21
1878 -	26,889,614	355,504	1·34	33,564,761	‡*545,186*	‡*1·60*	60,454,375	‡*189,682*	‡*0·31*
1879 -	25,915,585	‡*974,029*	‡*3·62*	33,479,697	‡*85,064*	‡*0·25*	59,395,282	‡*1,059,093*	‡*1·75*
1880 -	27,200,464	1,284,879	4·96	35,761,303	2,281,606	6·81	62,961,767	3,566,485	6·00
‖1881 -	*27,692,000*	*491,536*	*1·81*	*36,801,000*	*1,039,697*	*2·91*	*64,493,000*	*1,531,233*	*2·43*
1882 -	28,796,813	1,104,813	3·99	37,740,315	939,315	2·55	66,537,128	2,044,128	3·17
1883 -	29,508,733	711,920	2·47	38,701,319	961,004	2·55	68,210,052	1,672,924	2·51
1884 -	30,030,450	521,717	1·77	37,670,592	‡*1,030,727*	‡*2·66*	67,701,042	‡*509,010*	‡*0·75*
1885 -	29,773,022	‡*257,428*	‡*0·86*	36,871,945	‡*798,647*	‡*2·12*	66,644,967	‡*1,056,075*	‡*1·56*
1886 -	30,244,938	471,916	1·59	36,370,439	‡*501,506*	‡*1·36*	66,615,377	‡*29,590*	‡*0·04*
1887 -	30,573,287	328,349	1·09	37,341,299	970,860	2·67	67,914,586	1,299,209	1·95
1888 -	30,984,090	410,803	1·34	38,755,780	1,414,481	3·79	69,739,870	1,825,284	2·69
1889 -	32,630,724	1,646,634	5·31	41,086,333	2,330,553	6·01	73,717,057	3,977,187	5·70
1890 -	34,327,965	1,697,241	5·20	42,220,382	1,134,049	2·76	76,548,347	2,831,290	3·84
1891 -	35,130,916	802,951	2·34	43,230,717	1,010,335	2·39	78,361,633	1,813,286	2·37
1892 -	35,662,816	531,900	1·51	42,866,498	‡364,219	‡0·84	78,529,314	167,681	0·21

* Cannot be given for this year, several companies having omitted to make the necessary Returns.
‡ Increase of 1869 over 1867.
‡ Decrease.
‖ The Great Western Railway Company having changed the date to which its accounts were made up, the Returns of the Company published in the Parliamentary Paper C.—3279 of Session 1882 are for 11 months only. But the Company having obligingly supplied the Board of Trade with the necessary information, the figures given above for the year 1881 include approximately 12 months' working of the Great Western Railway. The amended figures are printed in *italics*.

No. 8.—Comparison of Numbers of Passenger-Journeys, Number of Season Ticket Holdres, and Tonnage of Goods and Minerals conveyed, in each of the Years from 1883 to 1892.

Year.	PASSENGERS. 1st Class.	2nd Class.	3rd Class and Parliamentary.	Total.	Holders of Season or Periodical Tickets.	Minerals.	General Merchandise.
ENGLAND AND WALES.						Tons.	Tons.
1883	29,897,866	59,083,508	523,420,384	612,401,758	†570,686	160,522,029	65,387,354
1884	28,233,996	55,315,478	537,581,714	621,131,188	†697,678	155,432,872	64,542,283
1885	26,437,116	54,400,083	541,332,745	622,169,944	†860,342	156,220,110	62,527,984
1886	25,942,264	54,363,466	561,196,303	641,502,033	‡†932,673	154,725,763	61,569,049
						*17,135	
1887	25,260,910	58,005,233	564,508,813	647,774,956	†990,815	164,934,563	64,117,915
1888	24,267,049	57,443,882	572,461,987	654,172,918	†1,056,160	171,433,249	67,849,678
1889	24,300,309	57,459,343	601,503,922	683,263,574	†1,158,234	179,996,664	72,470,473
						*11,984	
1890	24,534,664	57,663,792	638,916,325	721,114,781	†1,164,498	184,818,223	74,319,330
						*12,609	
1891	24,743,885	58,377,530	663,434,407	746,555,822	†1,306,205	188,410,498	75,400,170
						*15,929	
1892	24,906,934	56,932,213	680,791,819	762,630,966	†1,511,972	185,327,982	75,148,521
						*13,680	
SCOTLAND.							
1883	4,790,982	2,835,687	44,404,858	52,031,527	37,924	27,767,095	8,692,433
1884	4,711,500	2,715,932	46,877,642	54,305,074	47,354	27,063,389	8,463,532
1885	4,489,702	2,476,842	48,955,881	55,922,425	†42,375	26,533,827	8,279,017
1886	5,003,892	2,288,304	58,069,896	65,362,092	44,534	26,246,665	8,422,724
1887	4,695,255	1,930,158	59,807,204	66,432,617	51,579	27,308,278	8,794,242
1888	4,626,971	1,643,992	62,142,386	68,413,349	†96,353	29,080,119	9,610,911
1889	4,379,855	834,640	65,692,969	70,907,464	†87,087	30,626,514	10,236,519
1890	4,307,666	862,383	70,045,935	75,215,984	68,468	29,800,519	9,871,788
1891	4,167,347	804,441	71,733,800	76,705,588	68,726	31,931,083	10,156,196
1892	4,191,964	726,845	74,238,603	79,157,412	72,302	34,492,068	10,322,668
IRELAND.							
1883	1,699,029	4,177,589	13,408,234	19,284,852	23,440	1,196,488	2,817,569
1884	1,637,043	4,233,810	13,684,745	19,555,598	21,659	1,119,295	2,706,515
1885	1,538,324	4,108,847	13,473,491	19,120,662	21,825	1,022,808	2,704,708
1886	1,384,682	4,034,715	13,300,868	18,720,265	22,479	968,969	2,676,288
1887	1,367,624	4,203,965	13,899,369	19,470,958	23,695	1,012,359	2,759,527
1888	1,367,697	4,216,045	14,329,155	19,912,897	24,396	1,063,248	2,711,234
1889	1,394,646	4,393,944	15,223,445	21,012,035	25,891	1,179,383	2,984,960
1890	1,344,737	4,333,679	15,734,865	21,413,281	26,255	1,146,531	3,150,427
1891	1,512,544	4,196,426	16,493,288	22,202,258	27,845	1,186,677	3,224,054
1892	1,503,426	4,188,755	16,954,829	22,647,010	28,236	1,252,714	2,999,418
						*69,327	
UNITED KINGDOM.							
1883	36,387,877	66,096,784	581,233,476	683,718,137	†632,050	189,485,612	76,897,356
1884	34,582,539	62,265,220	598,144,101	694,991,860	†766,691	183,615,556	75,712,330
1885	32,465,142	60,985,772	603,762,117	697,213,031	†924,542	183,776,745	78,511,709
1886	32,330,838	60,686,485	632,567,067	725,584,390	‡†999,686	181,941,397	72,668,061
						*17,185	
1887	31,323,789	64,139,356	638,215,386	733,678,531	†1,066,089	193,255,200	75,671,684
1888	30,261,717	63,303,919	648,933,528	742,499,164	†1,176,909	201,576,616	80,171,823
1889	30,074,810	62,687,927	682,420,336	775,183,073	†1,271,212	211,802,561	85,691,952
						*11,984	
1890	30,187,067	62,859,854	724,697,125	817,744,046	†1,259,221	215,765,273	87,341,545
						*12,609	
1891	30,423,776	63,378,397	751,661,495	845,463,668	†1,402,776	221,528,258	88,780,420
						*15,929	
1892	30,602,324	61,847,813	771,985,251	864,435,388	†1,612,510	221,072,764	88,470,607
						*83,007	

* Not classified. † Including workmen's weekly tickets. ‡ Corrected figures.

No. 9.—Comparison of Number of Miles travelled by Passenger, Goods, and Mixed Trains in each of the Years from 1883 to 1892.

Year.	Miles travelled.			
	By Passenger Trains.	By Goods Trains.	By Mixed Trains.	Total.
ENGLAND AND WALES.				
1883	117,406,242	108,446,732	498,415	226,351,389
1884	121,582,978	106,605,484	784,097	228,972,559
1885	124,132,488	106,022,908	431,712	230,587,108
1886	125,259,057	105,880,810	482,788	231,622,655
1887	127,658,994	108,368,230	467,875	236,495,099
1888	130,392,602	112,331,601	484,843	243,209,046
1889	135,523,228	117,796,137	506,821	253,826,186
1890	139,735,909	122,327,410	478,651	262,541,970
1891	143,699,648	126,080,917	411,497	270,192,062
1892	147,505,521	125,693,764	415,448	273,614,733
SCOTLAND.				
1883	13,243,827	15,933,637	1,632,851	30,810,315
1884	13,955,677	16,245,044	1,770,154	31,970,875
1885	14,313,018	16,039,715	1,673,400	32,026,133
1886	15,457,261	15,964,790	1,682,596	33,104,647
1887	16,033,316	16,135,764	1,681,746	33,850,826
1888	16,783,587	16,564,728	1,714,208	35,062,523
1889	17,153,786	17,068,374	1,714,552	35,936,712
1890	18,478,646	17,026,055	1,837,601	37,342,302
1891	19,426,738	17,975,858	1,996,902	39,399,498
1892	19,620,603	18,296,240	2,089,063	40,005,906
IRELAND.				
1883	7,526,871	3,602,884	605,777	11,735,532
1884	7,606,039	3,822,255	431,492	11,859,786
1885	8,012,700	3,866,715	371,399	12,250,814
1886	8,101,646	3,582,385	719,740	12,403,771
1887	8,129,324	3,864,570	512,956	12,506,850
1888	8,284,563	3,932,755	708,247	12,925,565
1889	8,405,861	4,076,722	871,472	13,354,055
1890	8,452,232	4,272,103	856,185	13,580,520
1891	8,632,166	4,443,370	931,029	14,006,565
1892	8,799,598	4,483,398	910,971	14,193,967
UNITED KINGDOM.				
1883	138,176,940	127,983,253	2,737,043	268,897,236
1884	143,144,694	126,672,783	2,985,743	272,803,220
1885	146,458,206	125,929,338	2,476,511	274,864,055
1886	148,817,964	125,427,985	2,885,124	277,131,073
1887	151,821,634	128,368,564	2,662,577	282,852,775
1888	155,460,752	132,829,084	2,907,298	291,197,134
1889	161,082,875	138,941,233	3,092,845	303,116,953
1890	166,666,787	143,625,568	3,172,437	313,464,792
1891	171,758,552	148,500,145	3,339,428	323,598,125
1892	175,925,722	148,473,402	3,415,482	327,814,606

No. 10.—Comparison of Receipts (I.) from Passenger Traffic and (II.) from Goods Traffic.

I.—From Passenger Traffic in each of the Years from 1883 to 1892.

Year.	Receipts from Passenger Traffic.						
	Receipts from Passengers.					Excess Luggage, Parcels, Carriages, Horses, Dogs, and Mails.	Total.
	1st Class.	2nd Class.	3rd Class and Parliamentary.	Holders of Season or Periodical Tickets.	Total.		
ENGLAND AND WALES.							
	£	£	£	£	£	£	£
1883	2,998,905	2,859,017	14,702,697	1,498,554	22,059,173	3,045,708	25,104,881
1884	2,833,677	2,642,329	15,206,778	1,564,311	22,247,095	3,337,101	25,584,196
1885	2,646,041	2,493,521	15,211,691	1,617,192	21,968,445	3,414,250	25,382,695
1886	2,600,628	2,419,683	15,585,808	1,682,158	22,288,277	3,482,959	25,771,236
1887	2,541,431	2,399,960	15,785,424	1,744,207	22,471,022	3,605,742	26,076,764
1888	2,488,509	2,316,466	16,004,935	1,813,022	22,622,932	3,651,456	26,274,388
1889	2,635,937	2,339,982	16,998,718	1,942,850	23,917,487	3,856,797	27,774,284
1890	2,636,595	2,277,980	18,164,065	2,049,487	25,128,127	4,079,567	29,207,694
1891	2,598,716	2,174,588	18,744,206	2,151,178	25,668,688	4,237,820	29,906,508
1892	2,583,280	2,049,351	19,087,641	2,242,254	25,962,526	4,395,217	30,357,743
SCOTLAND.							
1883	450,010	147,085	1,661,281	146,038	2,404,414	480,763	2,885,177
1884	434,079	139,550	1,715,577	151,153	2,440,359	491,378	2,931,737
1885	399,579	122,873	1,697,283	155,663	2,375,398	504,982	2,880,380
1886	388,573	100,457	1,803,011	171,072	2,463,113	528,051	2,991,164
1887	374,001	78,971	1,815,462	178,362	2,446,796	543,468	2,990,264
1888	384,798	65,509	1,962,538	184,999	2,597,844	565,351	3,163,195
1889	380,290	46,503	2,026,624	197,528	2,650,945	593,654	3,244,599
1890	386,012	47,334	2,190,225	209,947	2,833,518	635,715	3,469,233
1891	371,751	44,017	2,241,724	221,425	2,878,917	649,409	3,528,326
1892	366,555	31,348	2,285,911	234,681	2,918,495	676,740	3,595,235
IRELAND.							
1883	221,138	323,642	686,086	47,999	1,278,865	239,810	1,518,675
1884	213,261	323,129	683,685	48,027	1,268,102	246,415	1,514,517
1885	197,350	314,717	679,756	49,669	1,241,492	268,455	1,509,947
1886	172,765	303,474	679,564	48,898	1,204,701	277,837	1,482,538
1887	166,076	309,872	692,158	50,430	1,218,536	287,723	1,506,259
1888	166,974	310,431	722,761	52,991	1,253,157	293,350	1,546,507
1889	171,300	318,249	760,102	55,590	1,305,241	306,600	1,611,841
1890	171,084	320,391	788,557	56,950	1,336,982	314,056	1,651,038
1891	173,142	308,876	823,929	60,367	1,366,314	329,768	1,696,082
1892	171,793	295,669	843,403	61,017	1,371,882	337,956	1,709,838
UNITED KINGDOM.							
1883	3,670,053	3,329,744	17,050,064	1,692,591	25,742,452	3,766,281	29,508,733
1884	3,481,017	3,105,008	17,606,040	1,763,491	25,955,556	4,074,894	30,030,450
1885	3,242,970	2,931,111	17,588,730	1,822,524	25,585,335	4,187,687	29,773,022
1886	3,161,966	2,823,614	18,068,383	1,902,128	25,956,091	4,288,847	30,244,938
1887	3,081,508	2,788,803	18,293,044	1,972,999	26,136,354	4,436,933	30,573,287
1888	3,040,281	2,692,406	18,690,234	2,051,012	26,473,933	4,510,157	30,984,090
1889	3,187,527	2,704,734	19,785,444	2,195,968	27,873,673	4,757,051	32,630,724
1890	3,193,691	2,645,705	21,142,847	2,316,384	29,298,627	5,029,338	34,327,965
1891	3,143,609	2,527,481	21,809,859	2,432,970	29,913,919	5,216,997	35,130,916
1892	3,121,628	2,376,368	22,216,955	2,537,952	30,252,903	5,409,913	35,662,816

No. 10.—Comparison of Receipts (I.) from Passenger Traffic and (II.) from Goods Traffic—*continued.*

II.—From Goods Traffic, and Proportion of Receipts from Passenger and Goods Traffic, in each of the Years from 1883 to 1892.

Year.	Receipts from Goods Traffic.				Total from Passenger and Goods Traffic.	Proportion of Receipts from Passenger and Goods Traffic.	
	Minerals.	General Merchandise.	Live Stock.	Total Goods Traffic.		Passenger.	Goods.
ENGLAND AND WALES.							
	£	£	£	£	£	Per cent.	Per cent.
1883	14,057,188	18,028,587	787,642	32,873,417	57,978,298	43	57
1884	13,398,433	17,750,107	824,471	31,973,011	57,557,207	44	56
1885	13,169,551	17,312,933	834,489	*31,317,711	56,700,406	45	55
1886	12,990,568	16,943,646	882,617	*30,817,947	56,589,183	46	54
1887	13,572,625	17,250,668	867,998	*31,692,729	57,769,493	45	55
1888	13,995,263	18,001,156	890,179	32,886,598	59,160,986	44	56
1889	14,791,828	19,245,723	879,982	34,917,533	62,691,817	44	56
1890	15,296,186	19,781,781	898,213	35,976,180	65,183,874	45	55
1891	15,658,055	20,196,354	910,586	36,764,995	66,671,503	45	55
1892	15,279,696	20,122,011	880,884	36,282,591	66,640,334	46	54
SCOTLAND.							
1883	2,062,223	2,267,685	175,996	*4,530,869	7,416,046	39	61
1884	2,001,690	2,212,556	187,589	*4,426,023	7,357,760	40	60
1885	1,955,861	2,162,288	187,255	4,305,404	7,185,784	40	60
1886	1,915,286	2,171,897	195,164	4,282,347	7,273,511	41	59
1887	1,946,349	2,228,040	194,111	4,368,500	7,358,764	41	59
1888	2,034,383	2,327,282	202,962	4,564,627	7,727,822	41	59
1889	2,116,465	2,464,452	207,124	4,788,041	8,032,640	40	60
1890	2,106,961	2,495,811	216,130	4,818,902	8,288,135	42	58
1891	2,258,394	2,522,258	221,945	5,002,597	8,530,923	41	59
1892	2,412,957	2,544,708	208,001	5,165,666	8,760,901	41	59
IRELAND.							
1883	136,010	952,215	208,808	1,297,033	2,815,708	54	46
1884	128,533	917,305	225,720	1,271,558	2,786,075	54	46
1885	120,818	906,943	221,069	1,248,830	2,758,777	55	45
1886	121,574	906,866	241,705	1,270,145	2,752,683	54	46
1887	126,235	922,460	231,375	1,280,070	2,786,329	54	46
1888	129,235	911,403	263,917	1,304,555	2,851,062	54	46
1889	143,874	984,183	252,702	1,380,759	2,992,600	54	46
1890	140,153	1,022,515	262,632	1,425,300	3,076,338	54	46
1891	147,855	1,057,477	257,793	1,463,125	3,159,207	54	46
1892	152,809	1,012,951	252,481	1,418,241	3,128,079	55	45
UNITED KINGDOM.							
1883	16,255,421	21,248,487	1,172,446	*38,701,319	68,210,052	43	57
1884	15,528,656	20,879,968	1,237,780	*37,670,592	67,701,042	44	56
1885	15,246,230	20,382,164	1,242,813	*36,871,945	66,644,967	45	55
1886	15,027,428	20,022,409	1,319,486	*36,370,439	66,615,377	45	55
1887	15,645,209	20,401,168	1,293,484	*37,341,299	67,914,586	45	55
1888	16,158,881	21,239,841	1,357,058	38,755,780	69,739,870	44	56
1889	17,052,167	22,694,358	1,339,808	41,086,333	73,717,057	44	56
1890	17,543,300	23,300,107	1,376,975	42,220,382	76,548,347	45	55
1891	18,064,304	23,776,089	1,390,324	43,230,717	78,361,638	45	55
1892	17,845,462	23,679,670	1,341,366	42,866,498	78,529,314	45	55

* Including receipts not classified.

No. 11.—Comparison of Railway Working Expenditure.

Expenditure† of Railway Companies in England and Wales, Scotland, and Ireland, in each of the Years 1883 to 1892.

Year.	Maintenance of Way, Works, &c.	Locomotive Power.	Repairs and Renewals of Carriages and Waggons.	Traffic Expenses.	General Charges.	Rates and Taxes.	Government Duty.	Compensation. For Personal Injury.	Compensation. For Damage to or Loss of Goods.	Legal and Parliamentary Expenses.	Miscellaneous.	Total.
ENGLAND AND WALES.												
1883	£ 5,545,784	£ 7,980,842	£ 2,692,868	£ 9,704,713	£ 1,384,502	£ 1,598,490	£ 681,560	£ 172,335	£ 171,237	£ 314,139	£ 338,875	£ *30,579,370
		44,595		765								
1884	5,466,765	8,101,991	2,816,192	9,747,891	1,396,331	1,664,660	369,677	147,395	177,140	280,778	345,927	*30,514,162
		51,475										
1885	5,208,240	8,068,956	2,916,130	9,771,161	1,396,419	1,734,608	316,591	106,739	162,503	217,444	312,674	*30,198,294
		37,994		865								
1886	4,967,859	7,979,466	2,951,283	9,733,151	1,408,612	1,794,431	296,897	150,008	146,708	188,842	298,001	*29,895,180
		30,245		756								
1887	4,996,793	8,073,570	3,069,318	9,921,505	1,435,341	1,852,685	288,276	148,485	152,193	192,887	298,226	*30,444,931
		65,734		676								
1888	5,113,268	8,239,109	3,094,772	10,170,607	1,462,520	1,897,797	286,480	85,753	147,981	198,665	361,520	*31,074,571
		66,885		671								
1889	5,466,737	9,031,518	3,180,229	10,628,811	1,490,076	1,952,620	299,818	160,543	162,279	219,295	355,223	*32,972,045
		76,682		686								
1890	5,900,061	10,204,625	3,309,588	11,271,938	1,522,603	1,957,097	303,544	118,988	193,315	237,866	361,116	*35,406,400
		77,747		1,097								
1891	6,118,746	10,922,135	3,348,459	11,934,406	1,599,742	1,960,764	297,086	132,954	225,116	234,572	352,742	*37,147,706
		73,627		1,486								
1892	6,200,678	10,814,229	3,420,238	12,224,031	1,653,764	2,077,268	288,181	177,376	250,358	234,138	355,823	*37,699,889
		57,598		1,133								
SCOTLAND.												
1883	774,038	929,352	471,806	1,096,011	158,644	181,047	57,696	63,167	19,883	45,657	103,427	3,900,728
1884	735,740	967,608	453,317	1,117,245	158,342	187,997	28,900	23,062	20,280	33,658	105,264	3,831,413
1885	686,808	911,556	440,972	1,123,682	157,943	181,745	26,865	16,805	13,826	20,929	107,116	3,688,247
1886	672,308	912,931	415,193	1,150,458	161,633	178,163	26,133	14,097	13,673	24,337	109,596	3,699,386
		20,864										
1887	676,662	922,536	418,827	1,151,767	165,480	180,190	24,454	11,113	13,000	30,561	110,724	3,705,314
1888	693,927	925,409	415,494	1,184,407	171,250	182,841	24,222	12,222	14,497	37,344	117,423	3,779,036
1889	694,499	1,002,124	436,605	1,241,835	171,908	197,790	24,135	16,422	17,367	40,977	118,854	3,962,516
1890	728,884	1,174,730	459,576	1,317,759	180,766	214,763	25,124	40,300	21,990	77,186	156,467	4,397,545
1891	753,877	1,287,274	468,882	1,392,926	176,075	211,593	24,174	19,835	27,113	72,526	128,692	4,562,967
1892	801,607	1,277,187	483,483	1,440,637	189,570	210,967	23,726	17,383	23,054	28,948	122,522	4,619,084

* Total, less amount received by the North London Company for working other lines. The amount received in each year was as follows:—

	£		£		£		£		£
1883	51,335	1885	52,030	1887	50,758	1889	52,472	1891	54,129
1884	52,060	1886	51,079	1888	51,457	1890	53,185	1892	[illegible]

† Exclusive of Steamboat, Canal, Harbour, and Dock Expenditure.

No. 11.—Comparison of Railway Working Expenditure—*continued.*

Expenditure† of Railway Companies in England and Wales, Scotland, and Ireland, in each of the Years 1883 to 1892—*continued.*

Year.	Maintenance of Way, Works, &c.	Locomotive Power.	Repairs and Renewals of Carriages and Waggons.	Traffic Expenses.	General Charges.	Rates and Taxes.	Government Duty.	Compensation. For Personal Injury.	Compensation. For Damage to or Loss of Goods.	Legal and Parliamentary Expenses.	Miscellaneous.	Total.
					IRELAND.							
1883	£ 423,976	£ 391,073	£ 130,693	£ 411,675	£ 80,595	£ 81,312	£ —	£ 11,530	£ 6,821	£ 13,389	£ 11,580	£ 1,563,508
		884										
1884	420,034	396,194	129,888	413,926	81,922	85,034	—	13,200	4,980	9,554	10,607	1,566,207
		868										
1885	410,775	397,024	129,141	412,319	78,779	83,526	—	4,466	4,976	9,032	10,087	1,540,992
		867										
1886	396,230	375,474	128,473	406,303	76,699	79,994	—	26,984	5,574	8,770	10,545	1,515,906
		850										
1887	399,412	368,434	128,427	408,045	77,991	80,141	—	16,808	4,440	18,452	12,446	1,515,426
		830										
1888	389,535	376,316	143,822	401,125	88,506	83,504	—	4,752	3,372	9,812	12,086	1,513,681
		851										
1889	404,342	416,594	137,413	413,589	89,201	83,630	—	69,404	3,852	8,775	13,760	1,640,795
		235										
1890	407,979	466,595	140,040	452,292	92,609	79,227	—	66,474	4,696	25,966	14,663	1,750,541
1891	413,261	488,244	144,148	469,998	96,311	74,073	—	12,430	5,575	13,912	14,875	1,732,827
1892	401,287	477,800	137,664	482,886	100,440	80,323	—	4,243	7,408	16,677	15,431	1,724,159
					UNITED KINGDOM.							
1883	6,743,798	9,301,267	3,295,367	11,212,399	1,623,741	1,860,849	739,256	247,032	197,941	373,185	453,882	*36,043,606
		45,459		765								
1884	6,622,539	9,465,793	3,399,397	11,279,062	1,636,595	1,937,691	398,577	183,657	202,400	323,990	461,798	*35,911,782
		52,313										
1885	6,305,823	9,377,536	3,186,243	11,307,162	1,633,141	1,999,879	343,456	128,010	181,305	247,405	429,877	*35,427,533
		38,861		865								
1886	6,036,397	9,267,871	3,494,949	11,289,912	1,646,944	2,052,588	323,030	191,089	165,955	221,949	418,142	*35,110,472
		51,969		756								
1887	6,072,867	9,364,540	3,616,572	11,481,317	1,678,812	2,113,016	312,730	176,406	169,633	241,900	421,396	*35,665,671
		66,564		676								
1888	6,196,730	9,540,834	3,654,088	11,756,139	1,722,276	2,164,142	310,702	102,727	165,850	245,821	491,029	*36,367,288
		67,736		671								
1889	6,565,578	10,450,236	3,754,247	12,284,235	1,751,185	2,234,040	323,953	246,369	183,498	269,047	487,837	*38,575,356
		76,917		686								
1890	7,036,924	11,845,950	3,909,204	13,041,989	1,795,978	2,251,087	328,668	225,762	220,001	341,018	532,246	*41,554,486
		77,747		1,097								
1891	7,285,884	12,697,653	3,961,489	13,797,330	1,872,128	2,246,430	321,260	165,219	257,804	321,010	496,309	*43,443,500
		73,627		1,186								
1892	7,403,572	12,569,216	4,041,385	14,147,554	1,943,774	2,368,558	311,907	199,002	280,820	279,763	493,776	*41,043,132
		57,598		1,133								

* *See* Note on page 26.

† Exclusive of Steamboat, Canal, Harbour, and Dock Expenditure.

No. 12.—Comparison of Receipts per Mile of Railway open from Passenger and Goods Traffic, in each of the Years from 1883 to 1892.

Year.	Passenger Traffic.							Goods Traffic.			Total from Passenger and Goods Traffic.
	1st Class.	2nd Class.	3rd Class and Parliamentary.	Season Ticket Holders.	Total.	Excess Luggage, Parcels, Carriages, Horses, Dogs, and Mails.	Total from Passenger Traffic.	Minerals.	General Merchandise.	Total from Goods Traffic.*	
	ENGLAND AND WALES.										
	£	£	£	£	£	£	£	£	£	£	£
1883	227	216	1,113	113	1,669	231	1,900	1,064	1,364	2,487	4,387
1884	212	198	1,140	117	1,667	251	1,918	1,004	1,331	2,397	4,315
1885	194	183	1,118	119	1,614	251	1,865	967	1,272	2,301	4,166
1886	190	177	1,139	123	1,629	255	1,884	950	1,239	2,253	4,137
1887	184	173	1,142	126	1,625	261	1,886	982	1,248	2,292	4,178
1888	178	166	1,145	129	1,618	261	1,879	1,001	1,287	2,352	4,231
1889	188	167	1,211	138	1,704	275	1,979	1,054	1,371	2,488	4,467
1890	187	161	1,287	145	1,780	289	2,069	1,083	1,401	2,548	4,617
1891	184	154	1,324	152	1,814	299	2,113	1,106	1,427	2,597	4,710
1892	181	144	1,340	158	1,823	309	2,132	1,073	1,413	2,548	4,680
	SCOTLAND.										
1883	152	50	560	49	811	162	973	696	765	1,529	2,502
1884	145	47	572	50	814	164	978	667	738	1,476	2,454
1885	134	41	569	52	796	170	966	656	725	1,444	2,410
1886	129	33	597	56	815	175	990	634	719	1,417	2,407
1887	121	26	590	58	795	176	971	632	724	1,419	2,390
1888	124	21	634	60	839	182	1,021	657	751	1,474	2,495
1889	122	15	650	63	850	191	1,041	679	790	1,535	2,576
1890	122	15	693	66	896	201	1,097	666	789	1,524	2,621
1891	117	14	707	70	908	205	1,113	712	795	1,577	2,690
1892	115	10	717	74	916	212	1,128	757	798	1,620	2,748
	IRELAND.										
1883	89	129	274	19	511	96	607	54	381	518	1,125
1884	84	128	271	19	502	98	600	51	363	504	1,104
1885	77	122	264	19	482	104	586	47	352	485	1,071
1886	66	115	258	19	458	105	563	46	345	483	1,046
1887	62	116	259	19	456	107	563	47	345	479	1,042
1888	61	114	264	19	458	108	566	47	333	477	1,043
1889	62	114	272	20	468	110	578	52	353	495	1,073
1890	61	115	283	20	479	112	591	50	366	510	1,101
1891	60	108	288	21	477	115	592	52	369	511	1,103
1892	60	102	291	21	474	117	591	53	350	490	1,081
	UNITED KINGDOM.										
1883	196	178	913	91	1,378	202	1,580	870	1,137	2,072	3,652
1884	185	165	933	93	1,376	216	1,592	823	1,107	1,997	3,589
1885	169	153	918	95	1,335	218	1,553	795	1,063	1,924	3,477
1886	164	146	935	98	1,343	222	1,565	777	1,036	1,881	3,446
1887	157	143	934	101	1,335	227	1,562	799	1,042	1,907	3,469
1888	153	136	943	104	1,336	228	1,564	816	1,072	1,956	3,520
1889	160	136	992	110	1,398	238	1,636	855	1,138	2,060	3,696
1890	159	132	1,053	116	1,460	250	1,710	874	1,161	2,103	3,813
1891	156	125	1,080	121	1,482	258	1,740	895	1,178	2,141	3,881
1892	154	117	1,093	125	1,489	266	1,755	878	1,165	2,109	3,864

* Including receipts for the carriage of Live Stock.

No. 13.—Comparison of Total Railway Receipts from Passenger Traffic and from Goods Traffic, per Train Mile and per Mile of Open Railway, of Railway Companies in England and Wales, Scotland, and Ireland, in each of the Years from 1883 to 1892.

Year.	Per Train Mile.				Per Open Mile of Railway.			
	England and Wales.	Scotland.	Ireland.	United Kingdom.	England and Wales.	Scotland.	Ireland.	United Kingdom.
FROM PASSENGER TRAFFIC.								
	d.	*d.*	*d.*	*d.*	£	£	£	£
1883	*51·32	*48·02	*46·26	*50·73	1,900	973	607	1,580
1884	*50·44	*46·37	*46·81	*49·86	1,918	978	600	1,592
1885	*49·03	*44·40	*44·32	*48·32	1,865	966	586	1,553
1886	*49·35	*42·90	*41·86	*48·27	1,884	990	563	1,565
1887	*49·00	*41·42	*43·37	*47·90	1,886	971	563	1,562
1888	*48·34	*41·84	*43·42	*47·37	1,879	1,021	566	1,564
1889	*49·15	*41·87	*44·80	*48·17	1,979	1,040	577	1,636
1890	*50·13	*41·68	*45·08	*48·94	2,069	1,097	591	1,710
1891	*49·91	*40·29	*45·27	*48·59	2,113	1,112	592	1,740
1892	*49·41	*40·65	*44·80	*48·13	2,132	1,128	591	1,755
FROM GOODS TRAFFIC.								
1883	*72·64	*65·76	*83·15	*72·07	2,488	1,529	518	2,072
1884	*71·86	*63·01	*78·63	*70·91	2,397	1,476	504	1,997
1885	*70·79	*62·20	*75·89	*69·85	2,301	1,444	485	1,924
1886	*69·79	*62·10	*81·86	*69·15	2,253	1,417	483	1,881
1887	*70·13	*62·82	*77·04	*69·42	2,293	1,419	479	1,907
1888	*70·20	*64·00	*76·75	*69·62	2,352	1,474	477	1,956
1889	*71·06	*65·19	*78·98	*70·54	2,488	1,536	495	2,060
1890	*70·48	*65·63	*77·01	*70·11	2,548	1,524	511	2,103
1891	*69·88	*64·45	*75·97	*69·40	2,597	1,577	511	2,141
1892	*69·26	*65·38	*73·06	*68·90	2,548	1,620	490	2,109
FROM PASSENGER AND GOODS TRAFFIC.								
1883	61·47	57·77	57·58	60·88	4,357	2,502	1,125	3,651
1884	60·33	55·23	56·38	59·56	4,315	2,453	1,103	3,589
1885	59·01	53·85	54·05	58·19	4,166	2,410	1,071	3,477
1886	58·64	52·78	53·26	57·69	4,137	2,407	1,046	3,446
1887	58·63	52·17	53·47	57·63	4,179	2,390	1,042	3,469
1888	58·38	52·90	52·94	57·48	4,231	2,495	1,043	3,520
1889	59·28	53·65	53·78	58·37	4,467	2,576	1,072	3,696
1890	59·59	53·27	54·37	58·61	4,617	2,621	1,102	3,813
1891	52·22	51·97	54·13	58·12	4,710	2,689	1,103	3,881
1892	58·45	52·56	52·89	57·49	4,680	2,748	1,081	3,864

* Exclusive of receipts on railways in cases where the traffic is conveyed by mixed trains.

No. 14.—Comparison of Railway Working Expenditure, (I.) per Train Mile, and (II.) per Mile of Open Railway.

I.—Comparison of Working Expenditure * by Railway Companies in England and Wales, Scotland, and Ireland, per Train Mile, in each of the Years from 1883 to 1892.

Year.	Maintenance of Way, Works, &c.	Locomotive Power.	Repairs and Renewals of Carriages and Waggons.	Traffic Expenses.	General Charges.	Rates and Taxes.	Government Duty.	Compensation.		Legal and Parliamentary Expenses.	Miscellaneous.	Total.
								For Personal Injury.	For Damage or Loss of Goods.			
					ENGLAND AND WALES.							
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
1883	5·87	8·48	2·86	10·27	1·47	1·69	·72	·18	·18	·33	·36	32·42
1884	5·72	8·52	2·96	10·20	1·46	1·74	·39	·15	·19	·29	·36	31·98
1885	5·41	8·41	3·04	10·15	1·45	1·81	·33	·11	·17	·23	·33	31·43
1886	5·14	8·28	3·06	10·07	1·46	1·86	·31	·16	·15	·20	·31	30·98
1887	5·07	8·22	3·13	10·05	1·46	1·88	·29	·15	·15	·20	·30	30·90
1888	5·04	8·16	3·07	10·02	1·44	1·87	·28	·08	·15	·20	·36	30·66
1889	5·16	8·58	3·02	10·04	1·41	1·85	·28	·15	·15	·21	·34	31·18
1890	5·39	9·36	3·04	10·29	1·39	1·79	·28	·11	·18	·22	·33	32·37
1891	5·43	9·73	2·99	10·59	1·42	1·74	·26	·12	·20	·21	·31	33·00
1892	5·43	9·51	3·01	10·71	1·45	1·82	·25	·16	·22	·20	·31	33·07
					SCOTLAND.							
1883	6·03	7·24	3·68	8·54	1·24	1·41	·45	·49	·15	·36	·81	30·39
1884	5·52	7·26	3·40	8·39	1·19	1·41	·22	·17	·15	·25	·79	28·76
1885	5·15	6·83	3·30	8·42	1·18	1·36	·20	·13	·10	·16	·80	27·64
1886	4·87	6·73	3·06	8·34	1·17	1·29	·19	·10	·10	·18	·79	26·82
1887	4·80	6·54	2·97	8·17	1·17	1·28	·17	·08	·09	·22	·79	26·27
1888	4·75	6·34	2·84	8·11	1·17	1·25	·17	·08	·10	·26	·80	25·87
1889	4·64	6·69	2·92	8·29	1·15	1·32	·16	·11	·12	·27	·79	26·46
1890	4·69	7·55	2·95	8·47	1·16	1·38	·16	·26	·14	·50	1·01	28·26
1891	4·59	7·84	2·86	8·49	1·07	1·29	·15	·12	·17	·44	·78	27·80
1892	4·81	7·66	2·90	8·64	1·14	1·27	·14	·10	·14	·17	·74	27·71
					IRELAND.							
1883	8·67	8·01	2·68	8·42	1·65	1·66	†—	·24	·14	·27	·24	31·97
1884	8·50	8·03	2·63	8·38	1·66	1·72	†—	·27	·10	·19	·21	31·69
1885	8·05	7·79	2·53	8·08	1·54	1·64	†—	·09	·10	·18	·20	30·19
1886	7·67	7·28	2·49	7·86	1·48	1·55	†—	·52	·11	·17	·20	29·33
1887	7·66	7·08	2·47	7·83	1·50	1·54	†—	·32	·09	·35	·24	29·08
1888	7·23	7·00	2·68	7·45	1·64	1·55	†—	·09	·06	·18	·22	28·11
1889	7·27	7·49	2·47	7·44	1·60	1·50	†—	1·25	·07	·16	·25	29·49
1890	7·21	8·25	2·47	7·99	1·64	1·40	†—	1·17	·08	·46	·26	30·94
1891	7·08	8·37	2·47	8·05	1·65	1·27	†—	·21	·10	·24	·25	29·69
1892	6·79	8·08	2·32	8·16	1·70	1·36	†—	·07	·13	·28	·26	29·15
					UNITED KINGDOM.							
1883	6·01	8·32	2·95	9·99	1·45	1·66	·69	·22	·18	·33	·41	32·17
1884	5·82	8·35	3·00	9·91	1·44	1·70	·37	·16	·18	·29	·41	31·59
1885	5·50	8·20	3·05	9·86	1·43	1·75	·31	·11	·16	·22	·38	30·93
1886	5·22	8·05	3·04	9·76	1·43	1·78	·29	·17	·14	·19	·36	30·41
1887	5·15	7·97	3·08	9·73	1·42	1·79	·28	·15	·14	·21	·36	30·26
1888	5·10	7·89	3·02	9·68	1·42	1·78	·27	·08	·14	·20	·40	29·97
1889	5·19	8·31	2·98	9·71	1·39	1·77	·27	·20	·15	·21	·39	30·54
1890	5·38	9·10	3·00	9·97	1·38	1·72	·26	·17	·17	·26	·41	31·82
1891	5·40	9·45	2·95	10·22	1·39	1·66	·25	·12	·19	·24	·37	32·22
1892	5·42	9·22	2·96	10·35	1·42	1·73	·24	·15	·21	·20	·36	32·24

* Exclusive of steamboat, canal, harbour, and dock expenditure.
† The railway passenger duty is not charged in Ireland.

No. 14.—Comparison of Railway Working Expenditure (I.) per Train Mile, and (II.) per Mile of Open Railway—*continued.*

II.—Comparison of Working Expenditure* by Railway Companies in England and Wales, Scotland, and Ireland, per Mile of Open Railway, in each of the Years 1883 to 1892.

Year.	Maintenance of Way, Works, &c.	Locomotive Power.	Repairs and Renewals of Carriages and Waggons.	Traffic Expenses.	General Charges.	Rates and Taxes.	Government Duty.	Compensation.		Legal and Parliamentary Expenses.	Miscellaneous.	Total.
								For Personal Injury.	For Damage or Loss of Goods.			
ENGLAND AND WALES.												
	£	£	£	£	£	£	£	£	£	£	£	£
1883	419	605	204	733	105	121	52	13	13	24	26	2,314
1884	409	609	212	729	105	125	28	11	13	21	26	2,287
1885	382	594	215	716	103	127	23	8	12	16	23	2,219
1886	363	584	216	710	103	131	22	11	11	14	22	2,186
1887	361	586	223	716	104	134	21	11	11	14	22	2,202
1888	365	592	222	726	105	136	20	6	11	14	26	2,222
1889	389	646	228	756	106	139	21	11	12	16	25	2,349
1890	417	726	235	797	108	139	21	8	14	17	26	2,508
1891	432	774	237	842	113	138	21	9	16	17	25	2,624
1892	435	761	241	857	116	145	20	13	18	16	25	2,647
SCOTLAND.												
1883	261	314	159	370	54	61	19	21	7	15	35	1,316
1884	245	323	151	373	53	63	10	8	7	11	35	1,278
1885	230	306	148	377	53	61	9	6	5	7	36	1,237
1886	222	307	139	381	53	59	9	5	5	8	36	1,224
1887	220	300	136	374	54	59	8	4	4	10	36	1,204
1888	224	299	134	382	55	59	8	4	5	12	38	1,220
1889	223	322	140	398	55	63	8	5	6	13	38	1,271
1890	230	372	145	417	57	68	8	13	7	24	49	1,391
1891	238	406	148	439	55	67	8	6	8	23	41	1,439
1892	251	401	152	452	60	66	7	6	7	9	38	1,449
IRELAND.												
1883	169	157	52	165	32	32	†—	5	3	5	5	625
1884	166	157	52	164	32	34	†—	5	2	4	4	620
1885	160	154	50	160	31	32	†—	2	2	4	4	598
1886	151	143	49	154	29	30	†	10	2	3	4	576
1887	149	138	48	153	29	30	†—	6	2	7	5	567
1888	142	138	53	147	32	31	†—	2	1	4	4	554
1889	145	150	49	148	32	30	†—	25	1	3	5	588
1890	146	167	50	162	33	28	†—	24	2	9	5	627
1891	144	171	50	164	34	26	†—	4	2	5	5	605
1892	139	165	47	167	35	28	†—	1	3	6	5	596
UNITED KINGDOM.												
1883	360	499	177	599	87	100	46	13	11	20	24	1,929
1884	350	503	181	597	87	103	24	10	11	17	24	1,904
1885	328	490	182	589	85	104	21	7	9	13	22	1,848
1886	312	480	181	583	85	106	19	10	9	11	22	1,816
1887	310	480	185	586	86	108	19	9	9	12	22	1,822
1888	312	483	185	593	87	109	18	5	8	12	25	1,836
1889	329	526	189	615	88	112	19	12	9	13	24	1,934
1890	350	592	195	649	89	112	19	11	11	17	27	2,070
1891	360	631	197	683	93	111	18	8	13	16	25	2,152
1892	364	620	199	695	96	116	18	10	14	14	24	2,167

* Exclusive of steamboat, canal, harbour, and dock expenditure.
† The railway passenger duty is not charged in Ireland.

No 15.—Comparison of Receipts per Train Mile, and Proportion per Cent. of Expenditure

Note.—The receipts of the lines worked

Year.	Caledonian.	Furness.	Great Eastern.	Great Northern.	Great Northern of Ireland.	Great North of Scotland.	Great Western.	Great Southern and Western of Ireland.	Lancashire and Yorkshire.
FROM PASSENGER TRAFFIC.									
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
1883	47·88	38·43	49·25	42·31	44·85	52·16	58·31	56·08	45·55
1884	44·96	36·71	50·41	40·51	45·55	48·22	58·33	52·81	44·04
1885	43·28	35·93	49·53	39·55	45·04	45·57	58·26	49·30	42·19
1886	42·28	34·35	48·95	39·44	43·82	40·29	57·85	46·15	42·74
1887	41·67	34·76	47·99	38·78	42·87	38·17	56·18	49·44	43·68
1888	43·25	36·44	47·24	39·23	43·87	35·87	55·19	48·08	43·31
1889	42·69	37·97	48·35	39·93	44·87	36·94	55·71	49·12	42·31
1890	42·52	38·23	49·08	40·74	45·77	38·13	55·58	49·46	42·61
1891	40·48	37·72	49·20	40·77	46·31	38·90	54·25	49·12	43·67
1892	40·97	36·76	48·32	40·93	46·29	39·69	53·71	48·28	44·39
FROM GOODS TRAFFIC.									
1883	68·18	125·80	69·20	61·05	87·62	67·33	64·96	74·40	99·44
1884	64·23	125·34	68·15	60·31	88·78	60·03	64·10	73·25	96·09
1885	63·46	121·97	65·77	59·65	79·55	55·90	63·49	70·91	94·09
1886	64·33	120·53	63·39	59·27	81·61	62·90	62·87	75·39	93·79
1887	66·75	122·13	62·04	59·77	80·65	63·38	63·75	74·19	93·93
1888	69·84	126·01	61·62	58·83	79·73	62·65	63·60	74·01	94·80
1889	70·30	129·26	62·03	60·81	81·87	64·23	64·41	74·89	95·68
1890	70·19	123·25	61·72	60·91	82·97	62·26	62·99	73·24	94·24
1891	69·17	117·42	61·21	61·20	83·53	63·64	62·00	71·07	95·45
1892	69·79	113·57	61·78	60·89	80·40	62·17	61·22	69·51	95·80
FROM PASSENGER AND GOODS TRAFFIC.									
1883	59·22	87·94	56·95	51·76	57·56	59·00	61·83	63·58	68·09
1884	55·62	84·92	57·35	50·09	58·31	53·60	61·33	61·06	65·58
1885	54·28	80·94	55·90	49·30	55·94	50·23	60·96	57·58	63·02
1886	53·71	79·01	54·67	49·07	55·49	48·97	60·36	56·97	63·56
1887	54·50	80·63	53·57	48·93	54·61	47·42	59·99	59·04	64·41
1888	56·66	83·95	52·95	48·83	55·20	45·41	59·45	57·93	64·51
1889	56·50	86·55	53·83	50·13	56·63	46·60	60·10	59·03	63·69
1890	55·95	83·43	54·10	50·54	57·53	46·84	59·28	58·81	63·02
1891	54·44	79·87	53·95	50·69	58·15	48·01	58·11	57·87	64·23
1892	55·11	75·73	53·56	50·57	57·17	48·00	57·43	56·50	64·60
PROPORTION OF EXPENDITURE TO RECEIPTS.									
	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
1883	54	47	55	57	54	61	49	54	55
1884	54	47	53	56	54	58	48	55	54
1885	52	50	53	56	54	53	48	57	58
1886	52	48	53	57	54	52	48	55	56
1887	51	49	52	57	53	52	48	54	54
1888	48	46	52	56	50	53	48	54	52
1889	49	44	52	57	58	52	49	52	54
1890	53	47	54	58	61	53	51	55	56
1891	53	51	56	59	51	50	52	53	57
1892	52	52	57	59	51	50	53	55	59

to RECEIPTS, for the Years from 1883 to 1892, of the following Railway Companies.

by the several Companies are included.

London and North-Western.	London and South-Western.	London, Brighton, and South Coast.	Manchester, Sheffield, and Lincolnshire.	Midland.	North British.	North-Eastern.	South-Eastern.	Taff Vale.	YEAR.
FROM PASSENGER TRAFFIC.									
d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	
51·51	56·83	57·85	46·80	41·58	45·82	46·30	70·35	71·62	1883
50·11	57·05	56·61	46·48	41·60	45·74	44·94	65·87	77·44	1884
49·44	56·43	53·98	45·93	40·51	43·67	43·57	64·24	75·07	1885
50·94	57·16	57·10	44·68	40·49	42·81	42·71	66·97	70·65	1886
51·37	56·92	56·30	45·58	40·58	40·12	43·03	64·21	70·73	1887
51·40	55·47	55·01	45·05	39·53	40·26	42·53	63·89	68·42	1888
52·08	56·42	56·17	46·28	39·21	41·35	44·91	64·05	73·93	1889
52·40	56·83	57·52	47·88	41·35	40·57	46·39	63·75	81·21	1890
52·46	57·17	57·66	48·46	40·92	39·00	44·99	62·75	85·63	1891
51·69	57·49	57·86	47·14	40·63	39·34	44·00	60·43	82·71	1892
FROM GOODS TRAFFIC.									
77·95	71·14	91·30	77·71	61·17	61·64	78·55	85·40	99·86	1883
79·48	68·93	90·03	76·44	61·16	59·62	76·00	81·75	93·75	1884
78·37	67·87	89·52	75·05	60·99	59·38	75·54	81·10	91·29	1885
78·48	65·37	90·83	71·84	60·28	58·02	73·71	79·32	85·70	1886
78·70	67·73	93·68	68·32	60·88	58·14	73·48	76·99	88·96	1887
79·34	67·93	94·05	67·15	60·75	58·88	74·12	76·57	95·70	1888
79·05	69·47	96·33	67·31	61·19	61·33	76·11	78·31	90·63	1889
78·87	67·63	96·86	66·46	60·75	62·41	78·14	77·49	80·51	1890
79·11	67·94	95·58	66·24	61·22	60·39	76·02	78·15	76·09	1891
77·19	67·59	95·07	64·29	60·68	61·59	73·70	78·05	79·30	1892
FROM PASSENGER AND GOODS TRAFFIC.									
64·89	60·78	63·86	66·08	53·41	54·69	65·78	73·71	95·22	1883
64·29	60·31	62·49	65·00	53·19	53·39	63·10	69·35	91·16	1884
63·37	59·58	60·15	63·71	52·53	52·20	61·88	67·87	88·72	1885
64·18	59·47	63·07	61·39	51·94	50·86	60·18	69·72	83·23	1886
64·56	59·96	62·80	60·03	52·33	49·56	60·28	66·97	86·09	1887
64·97	58·92	61·65	59·26	51·96	49·97	60·66	66·65	91·16	1888
65·23	60·01	62·82	60·02	52·19	51·91	63·06	67·10	87·65	1889
65·21	59·82	64·08	59·94	53·10	51·39	64·70	66·67	80·65	1890
65·42	60·20	64·15	59·96	53·22	49·62	62·59	66·12	78·16	1891
64·02	60·32	64·35	58·21	52·71	50·38	60·16	64·27	80·05	1892
PROPORTION OF EXPENDITURE TO RECEIPTS.									
Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	
52	59	52	50	53	51	51	51	56	1883
52	59	51	50	53	49	54	51	58	1884
52	59	50	50	53	50	55	51	57	1885
52	57	48	48	53	48	54	50	57	1886
53	54	48	51	53	48	54	50	56	1887
53	54	48	50	53	47	54	51	55	1888
53	53	47	49	53	47	53	51	56	1889
55	54	49	52	54	51	56	52	60	1890
56	54	51	52	55	53	57	55	64	1891
57	54	51	52	56	53	60	56	57	1892

No. 16.—Comparison of Expenditure per Train Mile for the Years

Note.—The expenditure of the lines worked

Year.	Caledonian.	Furness.	Great Eastern.	Great Northern.	Great Northern of Ireland.	Great North of Scotland.	Great Western.	Great Southern and Western of Ireland.	Lancashire and Yorkshire.
				MAINTENANCE OF WAY.					
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
1883	4·77	8·90	5·15	4·72	8·93	11·09	7·11	8·64	6·39
1884	5·04	7·06	4·98	4·56	9·06	9·32	6·90	8·13	6·23
1885	4·57	8·93	4·78	4·43	8·63	6·26	6·51	7·90	6·09
1886	4·39	7·55	4·62	4·43	8·05	6·06	6·25	7·23	5·35
1887	4·48	8·50	4·45	4·67	8·06	5·84	6·29	7·59	5·19
1888	4·22	6·63	4·36	4·42	7·58	5·61	6·21	7·35	5·35
1889	4·10	7·12	4·42	4·86	7·58	5·09	6·37	7·22	5·69
1890	4·15	7·86	4·66	4·91	7·79	4·70	6·46	7·20	5·72
1891	4·23	7·42	4·80	4·93	8·10	3·86	6·32	6·79	5·63
1892	4·41	6·56	4·79	4·87	7·41	3·80	6·40	6·51	5·88
				LOCOMOTIVE POWER.					
1883	7·96	10·03	8·94	7·75	8·29	7·16	7·63	9·31	8·76
1884	8·13	10·38	8·56	7·62	8·35	6·62	7·69	9·09	8·10
1885	7·11	10·04	8·40	7·60	8·05	6·42	7·58	8·86	9·33
1886	7·19	9·37	8·06	7·57	7·19	6·17	7·57	8·36	9·65
1887	6·97	9·56	7·89	7·58	6·66	6·14	7·64	8·29	9·45
1888	6·62	9·82	7·92	7·80	6·72	5·94	7·52	8·09	8·36
1889	6·91	9·92	8·23	8·25	7·16	6·32	7·92	8·51	9·44
1890	8·03	10·37	8·75	8·80	7·83	6·72	8·55	9·30	10·30
1891	8·25	11·24	9·12	9·27	7·70	7·07	8·95	9·18	11·13
1892	7·88	10·84	9·00	9·16	7·76	7·09	8·82	8·69	11·12
				REPAIRS AND RENEWALS OF ROLLING STOCK.					
1883	4·60	5·96	2·65	2·48	2·75	3·15	2·43	3·00	4·10
1884	3·99	6·59	2·63	2·46	2·94	2·78	2·43	2·95	3·94
1885	3·76	5·90	2·38	2·37	2·83	2·19	2·48	2·92	4·17
1886	3·45	5·85	2·35	2·42	2·62	1·77	2·48	2·98	3·25
1887	3·50	6·32	2·27	2·37	2·58	1·66	2·49	3·00	3·64
1888	3·42	6·60	2·29	2·37	2·60	1·68	2·58	3·09	2·80
1889	3·41	6·21	2·34	2·40	2·49	1·71	2·69	2·88	2·49
1890	3·48	6·20	2·47	2·49	2·54	1·68	2·70	2·80	2·48
1891	3·26	6·26	2·53	2·46	2·37	1·67	2·70	2·62	2·66
1892	3·25	6·53	2·48	2·38	2·28	1·72	2·70	2·68	3·52
				TRAFFIC CHARGES.					
1883	8·86	10·49	10·26	9·78	7·69	7·90	8·48	9·69	13·75
1884	8·50	10·29	10·19	9·57	7·88	7·30	8·62	9·47	13·21
1885	8·50	10·11	10·05	9·53	7·75	7·24	8·67	9·29	12·98
1886	8·55	9·92	9·91	9·46	7·53	7·16	8·66	9·16	12·76
1887	8·40	10·05	9·71	9·44	7·43	6·88	8·76	9·60	12·55
1888	8·47	9·93	9·59	9·39	7·43	6·77	8·69	8·63	12·97
1889	8·61	9·89	9·52	9·40	7·49	6·86	8·69	8·40	12·73
1890	8·84	9·99	9·67	9·54	8·20	6·98	8·80	9·30	12·67
1891	9·00	10·51	9·95	9·85	8·20	7·01	8·87	8·93	13·45
1892	9·27	10·56	10·03	9·92	8·49	7·20	8·99	9·24	13·52

from 1883 to 1892, of the following Railway Companies.

by the several Companies is included.

London and North-Western.	London and South-Western.	London, Brighton, and South Coast.	Manchester, Sheffield, and Lincolnshire.	Midland.	North British.	North-Eastern.	South-Eastern.	Taff Vale.	Year.
				MAINTENANCE OF WAY.					
d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	
5·95	6·39	4·98	4·46	4·75	6·30	6·18	5·39	8·83	1883
6·07	6·53	4·90	4·40	4·48	5·07	6·19	4·97	7·25	1884
5·81	6·25	4·76	4·44	4·14	4·97	5·60	4·79	7·92	1885
5·81	6·07	4·82	4·13	4·03	4·50	4·71	4·51	7·24	1886
5·66	5·83	5·17	4·06	3·74	4·20	4·64	4·14	7·55	1887
5·94	5·73	5·05	4·06	3·53	4·07	4·76	4·40	7·54	1888
5·94	5·78	4·76	4·06	3·57	4·16	5·21	4·16	7·24	1889
6·08	5·91	4·71	4·12	4·10	4·33	6·01	4·04	6·50	1890
6·12	5·80	4·96	4·18	4·37	4·43	5·95	4·42	6·05	1891
6·16	5·90	5.20	4·21	4·34	4·98	5·72	4·43	5·46	1892
				LOCOMOTIVE POWER.					
7·70	8·33	9·10	7·45	7·75	6·36	10·62	9·01	17·28	1883
7·86	9·68	8·97	7·13	7·67	6·46	10·75	8·61	17·52	1884
7·82	9·86	8·56	6·74	7·44	6·42	10·43	8·47	16·69	1885
7·89	9·41	8·38	6·18	7·14	6·13	10·28	8·10	16·00	1886
7·96	8·53	8·29	6·19	7·31	5·96	10·23	7·75	15·61	1887
7·90	8·18	8·30	6·26	7·32	5·88	10·34	7·80	16·52	1888
8·13	8·40	8·76	6·96	7·67	6·37	10·72	8·47	16·10	1889
9·01	8·92	9·59	8·05	8·44	6·99	11·97	9·36	18·09	1890
9·55	9·20	9·88	8·33	8·81	7·42	11·87	9·81	19·30	1891
9·18	9·13	9·59	8·27	8·71	7·33	11·19	9·44	16·66	1892
				REPAIRS AND RENEWALS OF ROLLING STOCK.					
2·09	2·68	2·74	2·86	3·00	2·94	4·42	2·72	4·12	1883
2·34	2·68	2·48	2·81	3·64	2·91	4·35	2·79	4·55	1884
2·40	2·73	2·18	2·82	3·91	2·90	5·09	2·86	3·71	1885
2·63	2·44	2·11	2·63	4·15	2·66	5·44	3·03	3·17	1886
2·65	2·44	2·15	2·52	4·25	2·54	5·65	2·98	3·76	1887
2·65	2·44	2·14	2·45	4·21	2·45	5·40	3·04	3·64	1888
2·50	2·52	1·90	2·34	4·10	2·60	5·33	3·01	3·42	1889
2·45	2·55	2·03	2·31	3·94	2·67	5·61	3·02	3·06	1890
2·56	2·60	2·17	2·29	3·65	2·69	5·22	3·03	2·14	1891
2·54	2·58	2·44	2·17	3·56	2·83	5·07	2·93	1·92	1892
				TRAFFIC CHARGES.					
12·26	12·47	9·05	11·88	9·30	8·29	9·05	10·11	10·28	1883
12·21	11·23	8·99	11·88	9·38	8·36	9·17	9·80	10·31	1884
11·93	11·44	8·85	11·95	9·28	8·39	9·27	9·80	10·31	1885
12·04	11·13	9·01	11·42	9·36	8·21	8·82	10·04	10·05	1886
12·24	10·93	8·88	11·11	9·40	8·02	8·69	9·92	9·85	1887
12·35	10·63	8·62	11·19	9·40	7·88	8·59	10·05	9·81	1888
12·42	10·36	8·56	10·99	9·40	8·18	8·74	10·26	10·09	1889
12·87	10·27	8·89	11·29	9·66	8·29	9·22	10·29	11·17	1890
13·32	10·31	9·06	11·37	10·03	8·15	9·70	10·69	12·04	1891
13·29	10·35	8·98	11·16	10·17	8·19	10·31	10·60	11·70	1892

No. 16.—Comparison of Expenditure per Train Mile for the Years

Note.—The expenditure of the lines worked

Year.	Caledonian.	Furness.	Great Eastern.	Great Northern.	Great Northern of Ireland.	Great North of Scotland.	Great Western.	Great Southern and Western of Ireland.	Lancashire and Yorkshire.
GENERAL CHARGES.									
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
1883	1·25	2·58	1·34	1·45	1·35	1·45	1·21	0·83	1·46
1884	1·20	2·60	1·32	1·39	1·31	1·28	1·21	0·84	1·43
1885	1·21	2·61	1·33	1·34	1·37	1·20	1·18	0·82	1·45
1886	1·26	2·50	1·28	1·29	1·28	1·16	1·23	0·82	1·43
1887	1·29	2·52	1·34	1·28	1·24	1·16	1·20	0·87	1·34
1888	1·33	2·60	1·28	1·33	1·23	1·16	1·16	1·33	1·36
1889	1·30	2·49	1·30	1·31	1·24	1·16	1·15	1·29	1·29
1890	1·26	2·31	1·32	1·30	1·35	1·22	1·14	1·27	1·26
1891	1·21	2·23	1·39	1·33	1·46	1·24	1·16	1·27	1·27
1892	1·18	2·32	1·53	1·34	1·51	1·25	1·19	1·24	1·24
RATES, TAXES, AND GOVERNMENT DUTY.									
1883	1·86	2·47	2·42	2·06	*1·34	2·56	2·45	*2·38	2·44
1884	1·65	2·49	1·93	1·81	*1·40	1·80	2·23	*2·49	2·12
1885	1·51	2·72	1·97	1·77	*1·32	1·80	2·17	*2·28	2·20
1886	1·49	2·68	1·90	1·73	*1·31	1·68	2·26	*2·09	2·26
1887	1·51	2·76	1·91	1·73	*1·32	1·56	2·23	*2·15	2·24
1888	1·49	2·58	1·92	1·70	*1·42	1·56	2·19	*2·18	2·24
1889	1·63	2·39	1·99	1·69	*1·29	1·59	2·12	*2·14	2·13
1890	1·68	2·27	2·03	1·68	*1·22	1·50	2·02	*1·97	2·03
1891	1·50	2·21	2·13	1·62	*1·21	1·57	1·90	*1·78	2·02
1892	1·47	2·42	2·20	1·67	*1·28	1·60	1·99	*1·88	2·12
MISCELLANEOUS.									
1883	2·52	0·63	0·75	1·09	0·79	2·62	0·71	0·60	0·64
1884	1·62	0·54	1·01	0·67	0·77	1·73	0·59	0·68	0·50
1885	1·44	0·20	0·71	0·55	0·36	1·43	0·51	0·50	0·52
1886	1·51	0·28	0·65	1·07	2·26	1·39	0·47	0·52	0·75
1887	1·55	0·17	0·45	0·64	1·79	1·31	0·44	0·44	0·51
1888	1·67	0·28	0·40	0·50	0·44	1·16	0·42	0·50	0·39
1889	1·65	0·30	0·37	0·46	5·70	1·63	0·42	0·47	0·56
1890	2·40	0·36	0·48	0·55	6·23	1·98	0·50	0·72	0·77
1891	1·46	0·48	0·49	0·55	0·83	1·74	0·55	0·67	0·69
1892	1·34	0·43	0·73	0·51	0·37	1·35	0·49	0·61	0·76
TOTAL.									
1883	31·82	41·06	31·52	29·36	31·18	35·93	30·02	34·47	37·56
1884	30·13	39·95	30·62	28·12	31·71	30·83	29·67	33·65	35·53
1885	28·10	40·51	29·62	27·59	30·31	26·54	29·10	32·57	36·74
1886	27·84	38·15	28·77	27·97	30·24	25·39	28·92	31·16	35·45
1887	27·70	39·88	28·02	27·71	29·08	24·55	29·05	31·94	34·92
1888	27·22	38·44	27·76	27·51	27·42	23·88	28·77	31·17	33·47
1889	27·61	38.32	28·17	28·37	32·95	24·36	29·36	30·91	34·33
1890	29·84	39·36	29·38	29·27	35·16	24·78	30·17	32·56	35·23
1891	28·91	40·35	30·41	30·01	29·87	24·16	30·45	31·24	36·85
1892	28·80	39·66	30·76	29·85	29·10	24·01	30·58	30·25	38·16

* The railway passenger duty is not charged in Ireland.

from 1883 to 1892, of the following Railway Companies—*continued.*

by the several Companies is included.

London and North-Western.	London and South-Western.	London, Brighton, and South Coast.	Manchester, Sheffield, and Lincolnshire.	Midland.	North British.	North-Eastern.	South-Eastern.	Taff Vale.	Year.
				GENERAL CHARGES.					
d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	
1·55	1·14	1·30	1·89	1·03	1·04	1·15	3·07	2·12	1883
1·55	1·17	1·28	1·86	1·04	1·03	1·12	2·90	2·06	1884
1·52	1·12	1·09	1·82	1·03	1·02	1·13	2·91	2·03	1885
1·54	1·22	1·13	1·72	1·00	0·98	1·14	3·07	2·04	1886
1·54	1·29	1·08	1·70	0·99	0·97	1·09	2·98	2·08	1887
1·61	1·26	1·06	1·73	0·95	0·97	1·05	3·01	2·12	1888
1·57	1·26	1·06	1·65	0·92	0·95	1·01	2·61	2·53	1889
1·54	1·32	1·06	1·66	0·93	0·96	1·02	2·46	2·17	1890
1·61	1·33	1·07	1·68	0·95	0·87	1·04	2·49	2·64	1891
1·66	1·33	1·12	1·62	0·98	1·07	1·04	2·44	2·44	1892
				RATES, TAXES, AND GOVERNMENT DUTY.					
2·26	2·80	3·81	1·90	1·77	1·54	1·97	5·02	3·95	1883
1·88	2·51	3·48	1·80	1·50	1·37	1·96	4·22	3·70	1884
1·93	2·43	3·11	1·88	1·55	1·30	2·09	4·32	3·86	1885
1·95	2·44	3·52	1·67	1·57	1·23	2·15	4·47	3·96	1886
2·05	2·54	3·27	1·70	1·63	1·19	2·08	4·05	4·21	1887
2·09	2·53	3·19	1·71	1·57	1·16	2·05	4·04	4·36	1888
2·00	2·57	3·28	1·62	1·55	1·21	1·99	4·10	4·08	1889
1·93	2·50	3·31	1·58	1·44	1·31	1·83	4·00	3·87	1890
1·84	2·36	3·29	1·57	1·26	1·22	1·81	4·12	3·77	1891
1·83	2·46	3·47	1·45	1·29	1·20	2·02	4·16	3·78	1892
				MISCELLANEOUS.					
0·94	1·97	2·06	2·30	0·53	1·18	0·48	2·05	7·16	1883
0·92	1·93	1·74	2·62	0·55	1·04	0·34	2·00	7·81	1884
0·81	1·50	1·32	2·13	0·42	0·96	0·31	1·27	6·29	1885
0·77	1·13	1·14	1·86	0·36	0·89	0·25	1·35	5·15	1886
0·84	1·05	1·23	3·57	0·38	0·85	0·22	1·35	5·12	1887
0·72	0·89	1·22	2·35	0·42	0·91	0·28	1·43	6·09	1888
0·99	0·71	1·40	2·03	0·43	0·91	0·48	1·31	5·35	1889
0·85	0·61	1·54	2·00	0·42	1·75	0·43	1·47	3·36	1890
0·76	0·90	2·09	1·77	0·46	1·58	0·30	1·63	4·18	1891
0·78	0·99	1·85	1·63	0·48	0·99	0·70	1·67	3·99	1892
				TOTAL.					
32·76	35·79	33·04	32·74	28·15	27·65	33·87	37·37	53·74	1883
32·83	35·73	31·85	32·51	28·26	26·24	33·89	35·29	53·20	1884
32·22	35·33	29·87	31·78	27·77	25.96	33·92	34·42	50·81	1885
32·63	33·84	30·11	29·61	27·61	24·60	32·79	34·57	47·61	1886
32·94	32·61	30·07	30·85	27·70	23·73	32·60	33·17	48·18	1887
33·26	31·66	29·58	29·75	27·40	23·32	32·47	33·77	50·08	1888
33·55	31·60	29·72	29·65	27·64	24·38	33·48	33·92	48·81	1889
34·73	32·08	31·18	31·01	28·93	26·30	36·09	34·64	48·22	1890
35·76	32·50	32·46	31·19	29·53	26·36	35·89	36·19	50·12	1891
35·44	32·74	32·65	30·51	29·53	26·59	36·05	35·67	45·95	1892

No. 17.—Comparison of the Total Number, and of the Number per Mile of Open Railway

Years.	Locomotives.		Carriages used for the Conveyance of Passengers only.		Other Vehicles attached to Passenger Trains.	
	Total Number.	Number per Mile Open.	Total Number.	Number per Mile Open.	Total Number.	Number per Mile Open.
ENGLAND AND WALES.						
1883	12,144	·92	27,274	2·06	10,133	·77
1884	12,482	·94	27,905	2·09	10,330	·77
1885	12,840	·94	28,352	2·08	10,461	·77
1886	13,006	·95	28,821	2·11	10,514	·77
1887	13,134	·95	29,524	2·14	10,407	·75
1888	13,256	·95	29,966	2·14	10,876	·78
1889	13,447	·96	30,512	2·17	11,057	·79
1890	13,731	·97	31,374	2·22	11,337	·80
1891	*14,314	1·01	33,253	2·35	11,795	·83
1892	*14,840	1·04	34,052	2·39	12,127	·85
SCOTLAND.						
1883	1,693	·57	3,591	1·21	1,269	·43
1884	1,713	·57	3,677	1·23	1,341	·45
1885	1,718	·58	3,773	1·26	1,388	·47
1886	1,739	·58	3,852	1·27	1,393	·46
1887	1,752	·57	3,914	1·27	1,509	·49
1888	1,763	·57	3,976	1·28	1,544	·50
1889	1,791	·57	4,077	1·31	1,554	·50
1890	1,814	·57	4,136	1·31	1,561	·49
1891	1,841	·58	4,244	1·34	1,608	·51
1892	1,880	·59	4,349	1·36	1,629	·51
IRELAND.						
1883	632	·25	1,439	·58	622	·25
1884	632	·25	1,449	·57	843	·33
1885	638	·25	1,533	·59	712	·28
1886	655	·25	1,543	·59	766	·29
1887	666	·25	1,583	·59	751	·28
1888	675	·25	1,606	·59	764	·28
1889	686	·25	1,548	·55	890	·32
1890	692	·25	1,558	·56	915	·33
1891	705	·25	1,625	·57	941	·33
1892	719	·25	1,678	·58	985	·34
UNITED KINGDOM.						
1883	14,469	·77	32,304	1·73	12,024	·64
1884	14,827	·79	33,031	1·75	12,514	·66
1885	15,196	·79	33,658	1·76	12,561	·66
1886	15,400	·80	34,216	1·77	12,673	·66
1887	15,552	·79	35,021	1·79	12,667	·65
1888	15,694	·79	35,548	1·79	13,184	·67
1889	15,924	·80	36,137	1·81	13,501	·68
1890	16,237	·81	37,068	1·85	13,813	·69
1891	*16,860	·84	39,122	1·94	14,344	·71
1892	*17,439	·86	40,079	1·97	14,741	·73

Note.—The numbers in the above table refer only to the carriages, waggons, &c. belonging to or hired by the railway companies.
* Including electric locomotives.

of LOCOMOTIVES, CARRIAGES, and other VEHICLES in each of the Years from 1883 to 1892.

Waggons of all Kinds used for the Conveyance of Live Stock, Minerals, or General Merchandise.		Any other Carriages or Waggons used on the Railway not included in the preceding Columns.		Total of Vehicles, excluding Locomotives.		Year.
Total Number.	Number per Mile Open.	Total Number.	Number per Mile Open.	Total Number.	Number per Mile Open.	
ENGLAND AND WALES.						
329,622	24·94	10,609	·80	377,638	28·57	1883
349,850	26·23	10,621	·80	398,706	29·89	1884
357,909	26·29	10,709	·79	407,431	29·93	1885
362,134	26·47	11,074	·81	412,543	30·16	1886
366,908	26·54	11,437	·83	418,276	30·26	1887
373,593	26·72	11,772	·84	426,207	30·48	1888
385,079	27·44	12,725	·91	439,373	31·31	1889
402,942	28·54	12,512	·89	458,165	32·45	1890
421,828	29·80	12,196	·86	479,072	33·84	1891
439,109	30·83	10,913	·77	496,201	34·84	1892
SCOTLAND.						
91,444	30·85	1,166	·39	97,470	32·88	1883
91,865	30·63	1,162	·39	98,045	32·69	1884
92,793	31·12	1,162	·39	99,116	33·24	1885
92,845	30·72	1,177	·39	99,267	32·85	1886
93,724	30·44	1,178	·38	100,325	32·58	1887
98,529	31·82	1,190	·38	105,239	33·98	1888
103,917	33·33	1,230	·39	110,778	35·53	1889
108,810	34·41	1,230	·39	115,737	36·60	1890
115,847	36·52	1,263	·40	122,962	38·77	1891
120,580	37·82	1,261	·40	127,819	40·09	1892
IRELAND.						
13,195	5·27	297	·12	15,553	6·22	1883
13,230	5·24	453	·18	15,975	6·33	1884
13,451	5·22	302	·12	15,998	6·21	1885
13,558	5·15	413	·16	16,280	6·19	1886
13,696	5·12	294	·11	16,324	6·10	1887
13,966	5·11	317	·11	16,653	6·09	1888
14,264	5·11	380	·14	17,082	6·12	1889
14,663	5·25	421	·15	17,557	6·29	1890
15,439	5·39	447	·16	18,452	6·45	1891
15,747	5·44	437	·15	18,847	6·51	1892
UNITED KINGDOM.						
434,261	23·25	12,072	·65	490,661	26·27	1883
454,945	24·12	12,236	·65	512,726	27·18	1884
464,153	24·21	12,173	·63	522,545	27·26	1885
468,537	24·24	12,664	·66	528,090	27·32	1886
474,328	24·28	12,909	·66	534,925	27·32	1887
486,088	24·54	13,279	·67	548,099	27·67	1888
503,260	25·28	14,335	·72	567,233	28·44	1889
526,415	26·22	14,163	·71	591,459	29·47	1890
553,114	27·39	13,906	·69	620,486	30·73	1891
575,436	28·31	12,611	·62	642,867	31·63	1892

NOTE.—The numbers in the above table refer only to the carriages, waggons, &c. belonging to or hired by the railway companies.

No. 18.—Expenditure of the under-mentioned Railway Companies in 1889, 1890, 1891, and 1892 o Carriages and Waggon

(Compiled from the printed Half-year

A.—FO

Name of Company.	In-Maintenance and Renewal of Permanent Way.				In Working Locomotive Engines.				In Repairs and Renewal of Engines.			
	1892.	1891.	1890.	1889.	1892.	1891.	1890.	1889.	1892.	1891.	1890.	1889.
	£	£	£	£	£	£	£	£	£	£	£	£
Caledonian	105,885	100,047	99,976	90,054	157,965	156,711	141,174	129,414	50,904	53,072	54,718	51,1
Great Eastern	147,024	145,105	144,549	133,105	212,773	204,121	194,144	183,365	126,142	119,184	113,742	102,8
Great Northern	111,005	107,590	105,794	101,674	245,276	239,064	225,406	206,786	101,105	99,066	91,965	85,6
Great Western	281,518	254,898	253,149	239,483	463,670	446,509	413,403	377,550	247,306	239,856	228,812	224,3
Lancashire and Yorkshire	80,660	80,899	80,708	75,105	246,009	242,898	229,826	209,652	105,463	107,123	96,282	109,4
London and North-Western	339,941	333,781	335,330	314,605	589,603	584,011	564,241	508,780	193,488	192,410	198,162	196,0
London and South-Western	133,021	132,059	130,477	123,929	164,913	157,831	151,881	143,691	66,988	63,364	58,893	59,9
London, Brighton, and South Coast	65,755	65,551	66,069	62,374	105,814	104,942	103,393	98,992	53,606	54,079	56,269	54,1
London, Chatham, and Dover	32,911	33,844	33,714	33,732	52,106	48,707	46,857	46,138	24,550	23,422	22,385	21,0
Manchester, Sheffield, and Lincolnshire.	42,124	40,740	38,352	37,647	171,007	157,830	150,686	135,545	91,532	94,299	89,329	86,7
Midland	224,020	221,406	200,562	191,499	618,795	592,508	532,960	499,442	225,407	216,073	204,405	192,1
North British	122,491	114,314	116,485	106,104	176,539	174,041	154,250	145,085	55,719	51,287	50,006	48,5
North-Eastern	205,433	206,966	201,995	193,674	389,138	402,424	385,615	344,564	231,632	252,199	242,577	241,3
South-Eastern	56,805	56,202	54,008	54,962	96,282	93,003	90,193	82,917	27,950	28,223	27,502	26,0
Taff Vale	15,703	17,696	17,999	18,764	54,173	57,300	51,950	49,767	20,277	18,086	18,379	16,5
Total	1,964,296	1,911,098	1,879,176	1,776,711	3,744,063	3,660,400	3,435,979	3,159,688	1,622,069	1,611,243	1,553,426	1,507,7

* Including "salaries an

B.—FO

Name of Company.	Materials for Maintenance and Renewal of Permanent Way.				Coal and Coke for Locomotive Engines.			
	1892.	1891.	1890.	1889.	1892.	1891.	1890.	1889.
	£	£	£	£	£	£	£	£
Caledonian	61,830	60,961	45,222	51,402	144,899	161,188	146,360	93,401
Great Eastern	114,066	106,392	92,009	76,502*	213,073	214,003	198,419	171,123
Great Northern	74,154	74,539	67,723	64,241	229,514	240,753	211,756	171,029
Great Western	185,138	211,633	224,811	181,847	381,916	405,523	348,904	263,745
Lancashire and Yorkshire	51,424	54,758	41,286	35,023	210,059	221,161	202,156	139,100
London and North-Western	188,819	204,756	194,761	174,024	502,911	546,770	468,166	325,007
London and South-Western	81,684	79,772	87,402	74,919	185,658	201,791	186,619	148,831
London, Brighton, and South Coast.	48,706	49,971	41,897	44,835	150,111	156,623	143,718	115,747
London, Chatham, and Dover	11,995	10,638	9,829	9,017	76,041	74,454	67,700	55,829
Manchester, Sheffield, and Lincolnshire.	38,338	33,663	30,908	28,557	157,869	151,852	146,168	102,116
Midland	144,598	131,351	108,010	96,569	430,410	438,678	395,701	290,438
North British	63,582	57,220	45,772	48,926	155,869	164,302	139,021	99,059
North-Eastern	125,781	152,027	149,607	108,729	293,567	338,654	337,355	215,421
South-Eastern	28,589	29,082	23,135	23,048	118,201	122,433	110,733	86,205
Taff Vale	8,309	6,780	8,386	10,097	40,168	52,322	52,129	40,431
Total	1,227,013	1,263,543	1,176,758	1,027,736	3,290,266	3,490,507	3,148,905	2,317,482

Wages and Materials in the Permanent Way, Locomotive, Repair and Renewal of and Traffic Departments.

Accounts of the Companies named.)

WAGES.

In Repairs and Renewal of Carriages and Waggons.				In Traffic Department.*				Name of Company.
1892.	1891.	1890.	1889.	1892.	1891.	1890.	1889.	
£	£	£	£	£	£	£	£	
56,147	55,729	56,421	55,919	400,864	393,376	368,799	343,079	Caledonian.
91,627	87,625	81,647	77,957	569,600	549,203	525,454	496,531	Great Eastern.
81,799	80,839	82,948	78,012	568,255	561,259	529,479	507,543	Great Northern.
188,322	175,153	173,963	174,816	1,009,554	968,136	931,597	881,946	Great Western.
83,735	81,351	79,709	85,119	755,043	742,176	704,342	674,506	Lancashire and Yorkshire.
157,333	150,038	142,537	137,647	1,721,059	1,697,932	1,603,571	1,508,727	London and North-Western.
69,294	69,085	68,730	65,576	462,479	451,784	439,967	424,545	London and South-Western.
40,901	37,260	35,150	35,059	252,686	249,445	243,678	230,572	London, Brighton, and South Coast.
21,409	20,540	19,963	19,654	160,356	154,164	147,625	144,292	London, Chatham, and Dover.
46,783	43,245	42,913	40,483	318,239	303,439	293,229	277,421	Manchester, Sheffield, and Lincolnshire.
229,382	213,953	213,787	208,207	1,514,136	1,449,767	1,340,075	1,244,592	Midland.
73,523	68,727	65,066	60,853	393,374	384,362	366,975	348,742	North British.
177,040	161,091	179,437	177,441	927,566	896,967	843,878	775,502	North-Eastern.
41,493	39,370	38,386	37,721	267,748	258,883	247,271	237,133	South-Eastern.
8,325	9,639	11,028	14,464	84,261	85,487	76,694	71,532	Taff Vale.
1,307,118	1,314,245	1,292,285	1,268,928	9,405,220	9,146,330	8,662,634	8,166,713	Total.

wages, &c." and clothing.

MATERIALS.

Materials for Repairs and Renewal of								Name of Company.
Engines.				Carriages and Waggons.				
1892.	1891.	1890.	1889.	1892.	1891.	1890.	1889.	
£	£	£	£	£	£	£	£	
59,766	62,634	58,123	53,411	130,165	130,640	131,528	121,226	Caledonian.
75,723	74,060	66,075	58,457	92,572	94,063	90,800	78,751	Great Eastern.
82,129	77,039	70,001	80,213	104,656	109,055	111,009	104,996	Great Northern.
179,972	167,267	155,051	148,076	217,318	223,445	206,779	187,607	Great Western.
67,856	65,563	68,264	69,831	65,346	64,723	62,278	53,116	Lancashire and Yorkshire.
213,448	209,496	204,159	218,214	289,959	292,831	275,975	276,077	London and North-Western.
51,687	41,760	43,846	43,885	73,730	71,426	66,220	62,396	London and South-Western.
35,792	34,070	33,566	31,209	51,786	43,467	39,057	32,869	London, Brighton, and South Coast.
22,757	21,641	21,128	20,954	28,466	27,221	26,340	24,390	London, Chatham, and Dover.
64,788	59,824	60,179	57,319	30,399	32,802	31,894	32,826	Manchester, Sheffield, and Lincolnshire.
217,172	233,687	222,027	195,358	368,156	392,087	412,654	418,983	Midland.
44,231	40,506	37,149	34,651	109,194	101,961	93,887	86,899	North British.
168,111	208,473	227,640	222,032	360,751	412,981	451,776	375,528	North-Eastern.
39,300	39,558	38,299	38,494	51,914	53,631	53,098	50,895	South-Eastern.
15,333	*11,199	*9,249	*10,443	7,055	7,505	12,426	13,602	Taff Vale.
1,338,065	1,344,777	1,314,756	1,282,547	1,981,467	2,057,838	2,035,721	1,920,161	Total.

* Repairs only.